

SEQUENCE LISTING

Ole THASTRUP Sara BJRON Soren TULLIN Kasper ALMHOLT Kurt SCUDDER

<120> A Method For Extracting Quantitative Information Relating To An Influence On A Cellular Response

<130> 3759-0120P

<140> 10/072,036

<141> 2002-02-05

<150> 09/417,197

<151> 1999-10-07

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<170> PatentIn version 3.0

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                                    10
gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc
                                                                       96
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
            20
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc
                                                                      144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
                             40
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc
                                                                      192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
                        55
                                             60
                                                                      240
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
                    70
                                         75
cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag
                                                                      288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                                     90
                85
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag
                                                                      336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
                                                     110
                                105
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc
                                                                      384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
                             120
         115
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atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr

432

| | 130 | | | | | 135 | | | | | 140 | | | | | |
|-----|---|------------------|------------|-----------|-------|-------|------|-------------|------|-------|------|-------|------------------|-----|-----|---------|
| aac | tac | aac | agc | cac | aac | gtc | tat | atc | atg | gcc | gac | aag | cag | aag | aac | 480 |
| Asn | Tyr | Asn | Ser | His | Asn | Val | Tyr | Ile | Met | Ala | Asp | Lys | Gln | Lys | Asn | |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 | |
| | | | gtg | | | | | | | | | | | | | 528 |
| GLY | Ile | Lys | Val | | Phe | Lys | Ile | Arg | | Asn | Ile | Glu | Asp | _ | Ser | |
| ~+~ | | a+ a | ~~~ | 165 | | | | | 170 | | | | | 175 | | F 77 6 |
| | | | gcc Ala | | | | | | | | | | | | | 576 |
| vaı | GIII | Leu | 180 | АЗР | птэ | тут | GIII | 185 | ASII | IIII | PIO | TTE | 190 | Asp | СТУ | |
| CCC | ata | cta | ctg | ccc | aac | 220 | cac | | cta | 200 | 200 | cad | | acc | cta | 624 |
| | | | Leu | | | | | | | | | | | | | 024 |
| | • | 195 | Leu | | 2100 | 71011 | 200 | - y - | Dea | JCI | 1111 | 205 | Der | ALG | пец | |
| agc | aaa | | ccc | aac | σασ | aaσ | | σat | cac | ato | atc | | cta | σασ | ttc | 672 |
| | | | Pro | | | | | | | | | | | | | 0.2 |
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| gtg | acc | gcc | gcc | ggg | atc | act | ctc | ggc | atg | gac | gag | ctg | tac | aag | tcc | 720 |
| | | | Ala | | | | | | | | | | | | | |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 | |
| | | | tct | | | | | | | | | | | | | 768 |
| Gly | Leu | Arg | Ser | Arg | Ala | Gln | Ala | Ser | Asn | Ser | Thr | Met | Ala | Ala | Ala | |
| | | | | 245 | | | | | 250 | | | | | 255 | | |
| | | | ggg | | | | | | | | | | | | | 816 |
| Ala | Ala | Gln | Gly | GLY | GLY | GLY | Gly | | Pro | Arg | Arg | Thr | | Gly | Val | |
| | | | 260 | | | | | 265 | | | | | 270 | | | |
| | | | gtc | | | | | | | | | | | | | 864 |
| GIY | PIO | 275 | Val | PIO | сту | GIU | 280 | GIU | мес | vaı | гаг | _ | GIN | Pro | Pne | |
| asc | ata | | ccg | cac | tac | 200 | | ++~ | Car | + 2.0 | a+ c | 285 | ~~~ | ~~~ | ~~~ | 912 |
| | | | Pro | | | | | | | | | | | | | 912 |
| шь | 290 | O _L y | 110 | ***** | - 7 - | 295 | 0111 | пси | OIII | - y - | 300 | OLY | Olu | Gry | лта | |
| tac | | atσ | gtc | agc | tca | | tat | gac | cac | ata | | aaσ | act | cac | ata | 960 |
| Tyr | Glv | Met | Val | Ser | Ser | Ala | Tyr | Asp | His | Val | Ara | Lvs | Thr | Ara | Val | 300 |
| 305 | _ | | | | 310 | | 4 | | | 315 | | | | 5 | 320 | |
| gcc | atc | aag | aag | atc | agc | ccc | ttc | gaa | cat | cag | acc | tac | tgc | cag | cgc | 1008 |
| Ala | Ile | Lys | Lys | Ile | Ser | Pro | Phe | Glu | His | Gln | Thr | Tyr | Cys | Gln | Arg | |
| | | | | 325 | | | | | 330 | | | | | 335 | | |
| _ | | | gag | | _ | | _ | - | - | | - | | | | _ | 1056 |
| Thr | Leu | Arg | Glu | Ile | Gln | Ile | Leu | | Arg | Phe | Arg | His | Glu | Asn | Val | |
| | | | 340 | | | | | 345 | | | | | 350 | | | |
| | | | cga | | | | | | | | | | | | | 1104 |
| Ile | GLY | | Arg | Asp | Ile | Leu | | Ala | Ser | Thr | Leu | | Ala | Met | Arg | |
| ~~+ | ~+~ | 355 | ~++ | | | | 360 | | | | | 365 | | | 4.4 | 1150 |
| | | | att | | | | | | | | | | | | | 1152 |
| ASP | 370 | туг | Ile | vaı | GIH | 375 | ьeu | Met | GIU | IIIL | 380 | ьeu | Tyr | ràs | Leu | |
| cta | | agg | cag | car | cta | | aat | пас | cat | atc | | tac | ttc | ctc | tac | 1200 |
| | | | Gln | | | | | | | | | | | | | 1200 |
| 385 | -,- | | 04 | 01 | 390 | 001 | | | | 395 | 0,5 | - 7 - | | шси | 400 | |
| | atc | cta | cgg | aac | | aaq | tac | atc | cac | | acc | aac | ata | ctc | | 1248 |
| | | | Arg | | | | | | | | | | | | | |
| | | | _ | 405 | | - | - | | 410 | | | | | 415 | | |
| cga | gat | cta | aag | ccc | tcc | aac | ctg | ctc | agc | aac | acc | acc | tgc | gac | ctt | 1296 |
| Arg | Asp | Leu | Lys | Pro | Ser | Asn | Leu | Leu | Ser | Asn | Thr | Thr | Cys | Asp | Leu | |
| | | | 420 | | | | | 425 | | | | | 430 | | | |
| | | | gat | | | | | | | | | | | | | 1344 |
| Lys | Ile | | Asp | Phe | Gly | Leu | | Arg | Ile | Ala | Asp | | Glu | His | Asp | |
| | | 435 | | | | | 440 | | | | | 445 | | | | |
| | | | ttc | | | | | | | | | | | | | 1392 |
| HIS | | ста | Phe | Leu | Thr | | Tyr | val | Ala | Thr | _ | Trp | Tyr | Arg | Ala | |
| 000 | 450 | a + c | a+~ | a+ ~ | 222 | 455 | | ~~~ | + | 2 | 460 | + | - - - | ~- | | 2 4 4 0 |
| | | | atg Met | | | | | | | | | | | | | 1440 |
| LLO | Gru | T T G | 1.16 C | ъeи | UOII | SGT | пуз | a τλ | TÀT | TILL | пĀг | Set | TTE | usb | тте | |

```
465
                     470
                                         475
tgg tct gtg ggc tgc att ctg gct gag atg ctc tct aac cgg ccc atc
                                                                      1488
Trp Ser Val Gly Cys Ile Leu Ala Glu Met Leu Ser Asn Arg Pro Ile
                485
                                     490
ttc cct ggc aag cac tac ctg gat cag ctc aac cac att ctg ggc atc
                                                                     1536
Phe Pro Gly Lys His Tyr Leu Asp Gln Leu Asn His Ile Leu Gly Ile
                                 505
                                                     510
ctg ggc tcc cca tcc cag gag gac ctg aat tgt atc atc aac atg aag
                                                                     1584
Leu Gly Ser Pro Ser Gln Glu Asp Leu Asn Cys Ile Ile Asn Met Lys
                            520
gcc cga aac tac cta cag tct ctg ccc tcc aag acc aag gtg gct tgg
                                                                     1632
Ala Arg Asn Tyr Leu Gln Ser Leu Pro Ser Lys Thr Lys Val Ala Trp
                        535
                                             540
gcc aag ctt ttc ccc aag tca gac tcc aaa gcc ctt gac ctg ctg gac
                                                                     1680
Ala Lys Leu Phe Pro Lys Ser Asp Ser Lys Ala Leu Asp Leu Leu Asp
                   550
                                        555
cgg atg tta acc ttt aac ccc aat aaa cgg atc aca gtg gag gaa gcg
                                                                     1728
Arg Met Leu Thr Phe Asn Pro Asn Lys Arg Ile Thr Val Glu Glu Ala
                565
                                    570
ctg gct cac ccc tac ctg gag cag tac tat gac ccg acg gat gag cca
                                                                     1776
Leu Ala His Pro Tyr Leu Glu Gln Tyr Tyr Asp Pro Thr Asp Glu Pro
                                585
                                                    590
gtg gcc gag gag ccc ttc acc ttc gcc atg gag ctg gat gac cta cct
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Val Ala Glu Glu Pro Phe Thr Phe Ala Met Glu Leu Asp Asp Leu Pro
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                                                 605
aag gag cgg ctg aag gag ctc atc ttc cag gag aca gca cgc ttc cag
                                                                     1872
Lys Glu Arg Leu Lys Glu Leu Ile Phe Gln Glu Thr Ala Arg Phe Gln
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Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
                                              125
                           120
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
                                          140
                       135
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
                                      155
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                                   170
               165
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
                               185
       180
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
                           200
       195
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
                                           220
                       215
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
                                      235
                   230
Gly Leu Arg Ser Arg Ala Gln Ala Ser Asn Ser Thr Met Ala Ala Ala
                                   250
                245
Ala Ala Gln Gly Gly Gly Gly Glu Pro Arg Arg Thr Glu Gly Val
                                                   270
                               265
Gly Pro Gly Val Pro Gly Glu Val Glu Met Val Lys Gly Gln Pro Phe
                                               285
                           280
Asp Val Gly Pro Arg Tyr Thr Gln Leu Gln Tyr Ile Gly Glu Gly Ala
                                           300
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Tyr Gly Met Val Ser Ser Ala Tyr Asp His Val Arg Lys Thr Arg Val
                                       315
                   310
Ala Ile Lys Lys Ile Ser Pro Phe Glu His Gln Thr Tyr Cys Gln Arg
                                   330
               325
Thr Leu Arg Glu Ile Gln Ile Leu Leu Arg Phe Arg His Glu Asn Val
                       345
Ile Gly Ile Arg Asp Ile Leu Arg Ala Ser Thr Leu Glu Ala Met Arg
                        360
Asp Val Tyr Ile Val Gln Asp Leu Met Glu Thr Asp Leu Tyr Lys Leu
                                            380
                        375
Leu Lys Ser Gln Gln Leu Ser Asn Asp His Ile Cys Tyr Phe Leu Tyr
                                        395
                    390
Gln Ile Leu Arg Gly Leu Lys Tyr Ile His Ser Ala Asn Val Leu His
                                    410
                405
Arg Asp Leu Lys Pro Ser Asn Leu Leu Ser Asn Thr Thr Cys Asp Leu
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 His Thr Gly Phe Leu Thr Glu Tyr Val Ala Thr Arg Trp Tyr Arg Ala
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 Pro Glu Ile Met Leu Asn Ser Lys Gly Tyr Thr Lys Ser Ile Asp Ile
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 Ala Arg Asn Tyr Leu Gln Ser Leu Pro Ser Lys Thr Lys Val Ala Trp
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 Arg Met Leu Thr Phe Asn Pro Asn Lys Arg Ile Thr Val Glu Glu Ala
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 Leu Ala His Pro Tyr Leu Glu Gln Tyr Tyr Asp Pro Thr Asp Glu Pro
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 Val Ala Glu Glu Pro Phe Thr Phe Ala Met Glu Leu Asp Asp Leu Pro
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Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
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gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc
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Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
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tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc
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Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
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ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag
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Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
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Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
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cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag
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Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
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 gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc
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 Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
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 atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac
 Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
                         135
 aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aac
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 Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
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                                         155
 ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc
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 Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                                     170
                                                         175
                 165
 gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc
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 Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
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| Pro | Val | Leu | Leu | Pro | Asp | Asn | His | Tyr | Leu | Ser | Thr | Gln | Ser | Ala | Leu | |
| | | 195 | | | | | 200 | ~~+ | 000 | 2+4 | at a | 205 | cta | a a a | ttc | 672 |
| agc | aaa | gac | Pro | aac Asn | Glu | aag Lys | Ara | Asp | His | Met | Val | Leu | Leu | Glu | Phe | 072 |
| Ser | 210 | лэр | 110 | 11.511 | 014 | 215 | 2129 | шр | 0 | | 220 | | | | | |
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| Val | Thr | Ala | Ala | Gly | Ile | Thr | Leu | Gly | Met | | Glu | Leu | Tyr | Lys | | |
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| gga | ctc | aga | tct | cga | gta | acc Thr | atg | gcg | gcg | gcg | gcg | gcg | gcg | Glv | Pro | 768 |
| СТУ | Leu | Arg | ser | 245 | Val | TIII | Met | Ата | 250 | лта | лта | лта | AIG | 255 | 110 | |
| gag | atq | atc | cac | | caq | gtg | ttc | gac | | ggg | ccg | cgc | tac | act | aat | 816 |
| Glu | Met | Val | Arg | ĞÎÿ | Gln | Vaĺ | Phe | Asp | Val | Gly | Pro | Arg | Tyr | Thr | Asn | |
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| Leu | Ser | Tyr 275 | IIe | GTA | GIU | Gly | 280 | Tyr | СТУ | мес | vaı | 285 | ser | Ald | ıyı | |
| rat | aat | | aac | aaa | att | cga | | act | atc | aaσ | aaa | | agt | cct | ttt | 912 |
| Asp | Asn | Leu | Asn | Lys | Val | Arg | Val | Ala | Ile | Lys | Lys | Ile | Ser | Pro | Phe | |
| _ | 290 | | | | | 295 | | | | | 300 | | | | | |
| gag | cac | cag | acc | tac | tgt | cag | aga | acc | ctg | aga | gag | ata | aaa | atc | cta | 960 |
| | His | Gln | Thr | Tyr | | Gln | Arg | Thr | Leu | | Glu | Ile | Lys | Ile | Leu 320 | |
| 305 | | ++- | 2022 | ast | 310 | aac | atc | a+c | aac | 315 | aat | gac | atc | atc | | 1008 |
| T.en | Ara | Phe | Ara | His | Glu | Asn | Ile | Ile | Glv | Ile | Asn | Asp | Ile | Ile | Arq | 2000 |
| | 9 | 20 | 9 | 325 | | | | | 330 | | | • | | 335 | _ | |
| gca | cca | acc | att | gag | cag | atg | aaa | gat | gta | tat | ata | gta | cag | gac | ctc | 1056 |
| Ala | ${\tt Pro}$ | Thr | Ile | Glu | Gln | Met | Lys | | Val | \mathtt{Tyr} | Ile | Val | | Asp | Leu | |
| | | | 340 | | | | | 345 | | | a | 000 | 350 ata | 200 | 22t | 1104 |
| atg | gag | aca Thr | gat | CLL | Tur | aag Lys | Len | LLG | Tvs | Thr | Gln | His | Len | Ser | Asn | 1104 |
| Met | GIU | 355 | изр | Бец | ı yı | цуо | 360 | шси | Lyo | | 0 | 365 | | | | |
| gat | cat | atc | tgc | tat | ttt | ctt | tat | cag | atc | ctg | aga | gga | tta | aag | tat | 1152 |
| Asp | His | Ile | Cys | Tyr | Phe | Leu | Tyr | Gln | Ile | Leu | Arg | Gly | Leu | Lys | Tyr | |
| | 370 | | | | | 375 | | | | | 380 | + | + | 222 | ata | 1200 |
| ata | cat | tca | gct | aat | gtt Val | ctg Leu | His | Ara | Asn | Len | Lvs | Pro | Ser | Asn | Leu | 1200 |
| 385 | nrs | Ser | AIG | ASII | 390 | пси | 1110 | **** 9 | пор | 395 | | | | | 400 | |
| cta | ctg | aac | acc | act | tgt | gat | ctc | aag | atc | tgt | gac | ttt | ggc | ctt | gcc | 1248 |
| Leu | Leu | Asn | Thr | Thr | Cys | Asp | Leu | Lys | Ile | Cys | Asp | Phe | Gly | Leu | Ala | |
| | | | | 405 | | | | | 410 | | | | | 415 | + - + | 1206 |
| cgt | gtt | gca | gat | cca | gac | cat His | gat | Cat | aca Thr | 999 61v | Pho | T.e.ii | Thr | Glu | Tur | 1296 |
| Arg | var | Ala | 420 | FIO | мэр | 1113 | лэр | 425 | 1111 | OLY | 1110 | пса | 430 | 014 | - 1 - | |
| αta | qcc | acq | | tgg | tac | aga | gct | | gaa | att | atg | ttg | aat | tcc | aag | 1344 |
| Val | Ãla | Thr | Ārg | Trp | Tyr | Arg | Āla | Pro | Glu | Ile | Met | Leu | Asn | Ser | Lys | |
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| ggt | tat | acc | aag | tcc | att | gat | att | tgg | tct | gtg | ggc | tgc | atc | ctg | gca Nla | 1392 |
| GIĀ | 1yr 450 | Thr | гуѕ | ser | ire | Asp 455 | 116 | пр | Ser | Val | 460 | Суз | 116 | пец | nia | |
| gag | | cta | taa | aac | aσσ | cct | atc | ttc | cca | qqa | | cat | tac | ctt | gac | 1440 |
| Glu | Met | Leu | Ser | Asn | Arg | Pro | Ile | Phe | Pro | Gly | Lys | His | Tyr | Leu | Asp | |
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| Gln | Leu | Asn | His | Ile 485 | Leu | Gly | тте | ьeu | G19 490 | ser | rro | ser | GTU | 495 | Asp | |
| cta | aat | tat | ata | | aat | tta | aaa | act | | aac | tat | tta | ctt | | ctc | 1536 |
| Leu | Asn | Cys | Ile | Ile | Asn | Leu | Lys | Ála | Arg | Asn | Tyr | Leu | Leu | Ser | Leu | |
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| Pro | His | Lys | Asn | гÀг | val | Pro | Trp | ASN | Arg | ьeu | rne | PIO | ASN | мта | ASP | |
| | | | | | | | | | | | | | | | | |

520 525 tcc aaa gct ctg gat tta ctg gat aaa atg ttg aca ttt aac cct cac 1632 Ser Lys Ala Leu Asp Leu Leu Asp Lys Met Leu Thr Phe Asn Pro His 530 535 aag agg att gaa gtt gaa cag gct ctg gcc cac ccg tac ctg gag cag 1680 Lys Arg Ile Glu Val Glu Gln Ala Leu Ala His Pro Tyr Leu Glu Gln 550 555 tat tat gac cca agt gat gag ccc att gct gaa gca cca ttc aag ttt 1728 Tyr Tyr Asp Pro Ser Asp Glu Pro Ile Ala Glu Ala Pro Phe Lys Phe 565 570 575 gac atg gag ctg gac gac tta cct aag gag aag ctc aaa gaa ctc att 1776 Asp Met Glu Leu Asp Asp Leu Pro Lys Glu Lys Leu Lys Glu Leu Ile 580 585 590 ttt gaa gag act gct cga ttc cag cca gga tac aga tct taa 1818 Phe Glu Glu Thr Ala Arg Phe Gln Pro Gly Tyr Arg Ser 600

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Gly Leu Arg Ser Arg Val Thr Met Ala Ala Ala Ala Ala Gly Pro
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Glu Met Val Arg Gly Gln Val Phe Asp Val Gly Pro Arg Tyr Thr Asn
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                                                 270
Leu Ser Tyr Ile Gly Glu Gly Ala Tyr Gly Met Val Cys Ser Ala Tyr
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Asp Asn Leu Asn Lys Val Arg Val Ala Ile Lys Lys Ile Ser Pro Phe
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Glu His Gln Thr Tyr Cys Gln Arg Thr Leu Arg Glu Ile Lys Ile Leu
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Leu Arg Phe Arg His Glu Asn Ile Ile Gly Ile Asn Asp Ile Ile Arg
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Ala Pro Thr Ile Glu Gln Met Lys Asp Val Tyr Ile Val Gln Asp Leu
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Ile His Ser Ala Asn Val Leu His Arg Asp Leu Lys Pro Ser Asn Leu
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Gly Tyr Thr Lys Ser Ile Asp Ile Trp Ser Val Gly Cys Ile Leu Ala
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Glu Met Leu Ser Asn Arg Pro Ile Phe Pro Gly Lys His Tyr Leu Asp
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Gln Leu Asn His Ile Leu Gly Ile Leu Gly Ser Pro Ser Gln Glu Asp
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Leu Asn Cys Ile Ile Asn Leu Lys Ala Arg Asn Tyr Leu Leu Ser Leu
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Pro His Lys Asn Lys Val Pro Trp Asn Arg Leu Phe Pro Asn Ala Asp
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                          520
Ser Lys Ala Leu Asp Leu Leu Asp Lys Met Leu Thr Phe Asn Pro His
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Lys Arg Ile Glu Val Glu Gln Ala Leu Ala His Pro Tyr Leu Glu Gln
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                   550
Tyr Tyr Asp Pro Ser Asp Glu Pro Ile Ala Glu Ala Pro Phe Lys Phe
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| Met 1 | Val | Ser | Lys | Ğİy 5 | Ğlű | Ğlú | Leu | Phe | Thr 10 | Gly | Val | Val | Pro | Ile 15 | Leu | | |
| atc | gag | ctg | gac | ggc | gac | gta | aac | ggc | cac | aag | ttc | agc | gtg | tcc | ggc | 96 | í |
| Val | Glu | Leu | Asp 20 | Gly | Asp | Val | Asn | Gly 25 | His | Lys | Phe | Ser | Val 30 | Ser | Gly | | |
| gag | ggc | gag | ggc | gat | gcc | acc | tac | ggc | aag | ctg | acc | ctg | aag | ttc | atc | 144 | ŧ |
| | Ğĺy | 35 | | | | | 40 | | | | | 45 | | | | 4.0.0 | |
| tgc | acc | acc | ggc | aag | ctg | ccc | gtg | CCC | tgg | ccc | acc | ctc | gtg | acc | acc | 192 | : |
| - | Thr 50 | | | | | 55 | | | | | 60 | | | | | 2.4.0 | , |
| ctg | acc | tac | ggc | gtg | cag | tgc | ttc | agc | cgc | tac | CCC | gac | cac | atg | aag | 240 | , |
| 65 | Thr | | | | 70 | | | | | 75 | | | | | 80 | 200 | |
| cag | cac | gac | ttc | ttc | aag | tcc | gcc | atg | CCC | gaa | ggc | tac | gtc | cag | Glu | 288 | , |
| | His | | | 85 | | | | | 90 | | | | | 95 | | 0.04 | _ |
| cgc | acc | atc | ttc | ttc | aag | gac | gac | ggc | aac | tac | aag | acc | cgc | gcc | gag | 336 |) |
| _ | Thr | | 100 | | | | | 105 | | | | | 110 | | | 204 | |
| gtg | aag | ttc | gag | ggc | gac | acc | ctg | gtg | aac | cgc | atc | gag | ctg | aag | ggc | 384 | Ŧ |
| | Lys | 115 | | | | | 120 | | | | | 125 | | | | 400 | |
| atc | gac | ttc | aag | gag | gac | ggc | aac | atc | ctg | ggg | cac | aag | ctg | gag | tac | 432 | 2 |
| | Asp 130 | | | | | 135 | | | | | 140 | | | | | 404 | _ |
| aac | tac | aac | agc | cac | aac | gtc | tat | atc | atg | gcc | gac | aag | cag | aag | aac | 480 | J |
| | Tyr | Asn | Ser | His | | Val | Tyr | TTE | Met | | Asp | гуѕ | GIII | пуѕ | 160 | | |
| 145 | atc | ~ | a+ a | 220 | 150 | 220 | atc | cac | cac | 155 | atc | gag | gac | aac | | 528 | 3 |
| ggc | Ile | Luc | g L g V a l | Agn | Phe | Lvs | Tle | Ara | His | Asn | Ile | Glu | Asp | Gly | Ser | | |
| _ | | | | 165 | | | | | 170 | | | | | 175 | | 576 | 6 |
| gtg | cag Gln | ctc | gcc | gac | cac | Tac | Cag | Cag | Aac | Thr | Pro | Tle | Glv | Asp | Glv | 37 | , |
| | | | 180 | | | | | 185 | | | | | 190 | | | 62 | 1 |
| ccc | gtg Val | ctg | ctg | CCC | gac | aac | cac | Tac | CEG | age | Thr | Cay | Ser | Δla | T.eu | 02 | • |
| | | 195 | | | | | 200 | | | | | 205 | | | | 67 | 2 |
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| | Lys 210 | | | | | 215 | | | | | 220 | | | | | 72 | Λ |
| gtg | acc | gcc | gcc | ggg | atc | act | ctc | ggc | atg | gac | gag | Ctg | Tur | Tue | Sor | / 2 | U |
| | Thr | Ala | АІа | GТĀ | 230 | | ьeu | . сту | met | 235 | GIU | neu | TAT | БУЗ | 240 | | |
| 225 | | 202 | + a+ | cas | | | act | tca | aat | | | ato | σασ | cta | gaa | 76 | 8 |
| Gly | Leu | Arg | Ser | Arg | Ala | Gln | Ala | Ser | Asn | Ser | Ser | Met | Glu | Leu 255 | Glu | | |
| | | | . ~ | 245 | | ~+~ | ++~ | c+~ | 250 | | ann | (122 | aaa | | gga | 81 | 6 |
| aac | atc | gtg | ycc ∡1≈ | aac | acg Thr | yıc Val | T.e. | Len | Lvs | Ala | Aro | Glu | . 999 LGlv | Glv | Gly | | - |
| ASI | тте | val | 260 | | | , a T | | 265 | | | | - | 270 |) | - 4 | | |
| aaa | aaa | cac | aaa | qqq | aaa | ago | aag | aag | ı tgç | g aaa | gaa | ato | ctg | aag | ttc | 86 | 4 |
| Gly | / Lys | Arg | , Lys | Ğĺý | ' Lys | Ser | Lys | Lys | Trp | Lys | Glu | ılle | . Leu | ı Lys | Phe | | |
| _ | | _ | | | | | | | | | | | | | | | |

| | | 275 | | | | | 280 | | | | | 285 | | | | |
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| Pro | His | Ile | Ser | Gln | Cys | Glu 295 | Asp | Leu . | Arg | Arg | 300 | ire | Asp | ALG | ASP | |
| tac | tac | agt | tta | tqt | gac | aaq | cag | cca | atc | ggg | agg | ctg | ctt | ttc | cgg | 960 |
| Tyr | Суѕ | Ser | Leu | Cys | Asp 310 | Lys | Gln | Pro | ше | 315 | Arg | Leu | Leu | FILE | 320 | |
| cad | ttt | tat | gaa | acc | agg | cct | ggg | ctg | gag | tgt | tac | att | cag | ttc | ctg | 1008 |
| Gln | Phe | Суѕ | Glu | Thr 325 | Arg | Pro | Gly | Leu | G1u 330 | Cys | Tyr | тте | GIII | 335 | Бец | 1056 |
| gac Asp | tcc Ser | gtg Val | Ala | gaa Glu | tat Tyr | gaa Glu | gtt Val | act Thr | cca Pro | gat Asp | gaa Glu | aaa Lys | Leu 350 | gga Gly | gag Glu | 1056 |
| | | | 340 | a + + | a+ a | 200 | 220 | 345 tac | ctc | acc | cca | aaσ | | cct | qtt | 1104 |
| aaa Lys | Gly | Lys 355 | Glu | Ile | Met | Thr | Lys 360 | Tyr | Leu | Thr | Pro | Lys 365 | Ser | Pro | Val | |
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| Phe | Ile 370 | Ala | Gln | Val | Gly | Gln 375 | Asp | Leu | Val | Ser | 380 | Thr | GIU | GIU | гуѕ | 1000 |
| ctc | cta | cag | aag | ccg | tgc | aaa | gaa | ctc | ttt | tct | gcc | tgt | gca | cag | tct | 1200 |
| Leu | Leu | Gln | Lys | Pro | Cys | Lys | Glu | Leu | Phe | Ser | Ala | Cys | Ala | GIN | Ser 400 | |
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| gtc | cac | gag | tac | ctg | agg | gga | gaa | cca Pro | Dhe | His | Glu | Tvr | Leu | Asp | Ser | |
| Val | His | GIU | Tyr | ьеи 405 | Arg | СТУ | GIU | FIO | 410 | 1110 | OLU | - 1 - | | 415 | | |
| ata | +++ | +++ | gac | cac | ttt | ctc | caq | tgg | aag | tgg | ttg | gaa | agg | caa | ccg | 1296 |
| Met | Phe | Phe | Asp | Arq | Phe | Leu | Gln | Trp | Lys | Trp | Leu | Glu | Arg | Gln | Pro | |
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| gtg | acc | aaa | aac | act | ttc | agg | cag | tat | cga | gtg | cta | gga | aaa | ggg | ggc | 1344 |
| Val | Thr | Lys 435 | Asn | Thr | Phe | Arg | Gln 440 | Tyr | Arg | Val | Leu | 445 | гуз | сту | GIY | 1392 |
| ttc | ggg | gag | gtc | tgt | gcc | tgc | cag | gtt | cgg | gcc | acg | ggt Glv | T.vs | Met | Tvr | 1332 |
| | 450 | | | | | 455 | | Val | | | 460 | | | | | |
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| Ala | Cys | Lys | Arg | Leu | Glu | Lys | Lys | Arg | Ile | Lys | Lys | Arg | Lys | Gly | GIU | |
| 465 | | | | | 470 | | | | | 475 | | a+ a | 220 | aat | 480 | 1488 |
| tcc | atg | gcc | ctc: | aat | gag | aag | cag | atc | TOU | Glu | T.vs | Val | Asn | Ser | cag Gln | 1100 |
| Ser | Met | . Ala | Leu | . Asn 485 | | гуз | GIII | . 110 | 490 | OIG | Lyo | | | 495 | i | |
| +++ | at o | ato | . aac | cta | acc | tat | acc | tac | qaq | acc | aag | gat | gca | ctg | tgc | 1536 |
| Phe | . ycg . Val | . Val | Asn | Leu | Ala | Tyr | Āla | Tyr | Ğlu | Thr | Lys | Asp | Ala | Leu | Cys | |
| | | | 500 | 1 | | | | 505 | | | | | 210 | | | 1584 |
| ttg | gto | cto | g acc | ato | atg | aat | ggg | ggt | gac | ctg | aag | tto | cac | ato | tac | 1564 |
| Leu | ı Val | | | : Ile | Met | Asn | . Gly 520 | , GIÀ | Asp | ь тел | гга | 525 | ; птэ | . 116 | Tyr | |
| _ | | 515 | | . aat | | . ++c | orac orac | r nan | σαο | cac | r acc | | | tat | gcg | 1632 |
| aac | : ato | J 999 | Jaau Jaco | Pro | . ggc | , Dhe | . Glu | , gag ı Glu | Glu | Arc | Ala | . Lei | 1 Phe | туг | Ala | |
| | 530 | ን | | | | 535 | 5 | | | | 540 |) | | | | |
| aca | | r ato | c cto | tgo | ggd | tta | a gaa | a gac | cto | cac | c cgt | gaç | g aac | acc | gtc | 1680 |
| Ālā | a Ğli | ŭ Il | e Lei | ı Cys | Gly | / Let | ı Glı | ı Asp | Lei | ı Hıs | s Arg | g Glu | ı Asr | 1 Thi | L var | |
| 545 | ξ. | | | | 550 |) | | | | 555 |) | | | | 360 | 1728 |
| tac | c cga | a ga | t cto | g aaa | a cct | t gaa | aaa | c ato | cto | g tta | a gai | c gan | L Lat | - 994 - Gl | c cac | 1720 |
| _ | | | | 565 | 5 | | | | 570 |) | | | | 5/3 | | |
| ati | t ag | g at | c tc | a gad | ct | g gg | c tto | g gct | gt | g aaq | g ato | c cc | c gaq | g gga | a gac | 1776 |
| Ile | e Ar | g Il | e Se: | r Ası n | , Le | u Gl | y Le | u Alá 585 | a Va. 5 | г гх: | S II. | e Pr | 59 | 0 | у кар | |
| cto | g at | c ca | c aa | c ca | g gt | g gg | c ac | t gtt | gg | c ta | c at | g gc | c cc | c ga | a gtc | 1824 |
| Le | u Il | e Ar | g Gl | y Ar | g Va. | 1 Gl | у Тh 60 | r Va. O | L GI | у ту | r Me | 60 | a Pr | O GI | u vai | |
| ct | g aa | ~ >> | c ca | g ag | g ta | c gg | c ct | g ago | c cc | c ga | c ta | c tg | a aa | c ct | t ggc | 1872 |
| Le | u As | n As | n Gl | n Ar | д Ту | r Gl | у Le | u Se: | r Pr | o As | р Ту | r Tr | p Gl | y Le | u Gly | |

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620
                        615
tgc ctc atc tat gag atg atc gag ggc cag tcg ccg ttc cgc ggc cgt
                                                                     1920
Cys Leu Ile Tyr Glu Met Ile Glu Gly Gln Ser Pro Phe Arg Gly Arg
                                        635
                    630
aag gag aag gtg aag cgg gag gag gtg gac cgc cgg gtc ctg gag acg
                                                                     1968
Lys Glu Lys Val Lys Arg Glu Glu Val Asp Arg Arg Val Leu Glu Thr
                                    650
                645
gag gag gtg tac tcc cac aag ttc tcc gag gag gcc aag tcc atc tgc
                                                                     2016
Glu Glu Val Tyr Ser His Lys Phe Ser Glu Glu Ala Lys Ser Ile Cys
            660
                                665
                                                                     2064
aag atg ctg ctc acg aaa gat gcg aag cag agg ctg ggc tgc cag gag
Lys Met Leu Leu Thr Lys Asp Ala Lys Gln Arg Leu Gly Cys Gln Glu
                                                685
                            680
gag ggg gct gca gag gtc aag aga cac ccc ttc ttc agg aac atg aac
                                                                     2112
Glu Gly Ala Ala Glu Val Lys Arg His Pro Phe Phe Arg Asn Met Asn
                                            700
                        695
                                                                     2160
ttc aag cgc tta gaa gcc ggg atg ttg gac cct ccc ttc gtt cca gac
Phe Lys Arg Leu Glu Ala Gly Met Leu Asp Pro Pro Phe Val Pro Asp
                    710
                                        715
ccc cgc gct gtg tac tgt aag gac gtg ctg gac atc gag cag ttc tcc
                                                                     2208
Pro Arg Ala Val Tyr Cys Lys Asp Val Leu Asp Ile Glu Gln Phe Ser
                                    730
                725
act gtg aag ggc gtc aat ctg gac cac aca gac gac gac ttc tac tcc
                                                                     2256
Thr Val Lys Gly Val Asn Leu Asp His Thr Asp Asp Asp Phe Tyr Ser
                                                     750
                                745
            740
aag ttc tcc acg ggc tct gtg tcc atc cca tgg caa aac gag atg ata
                                                                     2304
Lys Phe Ser Thr Gly Ser Val Ser Ile Pro Trp Gln Asn Glu Met Ile
                            760
gaa aca gaa tgc ttt aag gag ctg aac gtg ttt gga cct aat ggt acc
                                                                     2352
Glu Thr Glu Cys Phe Lys Glu Leu Asn Val Phe Gly Pro Asn Gly Thr
                                             780
                         775
    770
                                                                      2400
ctc ccg cca gat ctg aac aga aac cac cct ccg gaa ccg ccc aag aaa
Leu Pro Pro Asp Leu Asn Arg Asn His Pro Pro Glu Pro Pro Lys Lys
                     790
ggg ctg ctc cag aga ctc ttc aag cgg cag cat cag aac aat tcc aag
                                                                      2448
Gly Leu Leu Gln Arg Leu Phe Lys Arg Gln His Gln Asn Asn Ser Lys
                                     810
                 805
agt tcg ccc agc tcc aag acc agt ttt aac cac cac ata aac tca aac
                                                                      2496
Ser Ser Pro Ser Ser Lys Thr Ser Phe Asn His His Ile Asn Ser Asn
                                                     830
                                 825
             820
                                                                      2529
cat gtc agc tcg aac tcc acc gga agc agc tag
His Val Ser Ser Asn Ser Thr Gly Ser Ser
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                             840
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<211> 842

<212> PRT

<213> Artificial Sequence

<220>

<223> EGFP-Grk5 fusion

<400> 43

Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu

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                              25
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Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
                       55
                                           60
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
                                       75
                   7.0
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                                   90
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
           100
                              105
                                                  110
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
                           120
       115
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
                       135
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
                   150
                                       155
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                                  170
               165
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
          180
                              185
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
                          200
                                    205
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
                       215
                                           220
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
                   230
                                       235
Gly Leu Arg Ser Arg Ala Gln Ala Ser Asn Ser Ser Met Glu Leu Glu
                                   250
               245
Asn Ile Val Ala Asn Thr Val Leu Leu Lys Ala Arg Glu Gly Gly
                               265
Gly Lys Arg Lys Gly Lys Ser Lys Lys Trp Lys Glu Ile Leu Lys Phe
                           280
                                              285
Pro His Ile Ser Gln Cys Glu Asp Leu Arg Arg Thr Ile Asp Arg Asp
                                           300
                       295
Tyr Cys Ser Leu Cys Asp Lys Gln Pro Ile Gly Arg Leu Leu Phe Arg
                   310
                                       315
Gln Phe Cys Glu Thr Arg Pro Gly Leu Glu Cys Tyr Ile Gln Phe Leu
                325
                                   330
Asp Ser Val Ala Glu Tyr Glu Val Thr Pro Asp Glu Lys Leu Gly Glu
                               345
           340
Lys Gly Lys Glu Ile Met Thr Lys Tyr Leu Thr Pro Lys Ser Pro Val
                           360
                                               365
Phe Ile Ala Gln Val Gly Gln Asp Leu Val Ser Gln Thr Glu Glu Lys
                       375
                                           380
Leu Leu Gln Lys Pro Cys Lys Glu Leu Phe Ser Ala Cys Ala Gln Ser
                    390
                                        395
Val His Glu Tyr Leu Arg Gly Glu Pro Phe His Glu Tyr Leu Asp Ser
                405
                                    410
                                                       415
Met Phe Phe Asp Arg Phe Leu Gln Trp Lys Trp Leu Glu Arg Gln Pro
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            420
Val Thr Lys Asn Thr Phe Arg Gln Tyr Arg Val Leu Gly Lys Gly Gly
                           440
                                                445
Phe Gly Glu Val Cys Ala Cys Gln Val Arg Ala Thr Gly Lys Met Tyr
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                                           460
Ala Cys Lys Arg Leu Glu Lys Lys Arg Ile Lys Lys Arg Lys Gly Glu
                                       475
                   470
Ser Met Ala Leu Asn Glu Lys Gln Ile Leu Glu Lys Val Asn Ser Gln
                                    490
Phe Val Val Asn Leu Ala Tyr Ala Tyr Glu Thr Lys Asp Ala Leu Cys
            500
                                505
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Leu Val Leu Thr Ile Met Asn Gly Gly Asp Leu Lys Phe His Ile Tyr
               520
Asn Met Gly Asn Pro Gly Phe Glu Glu Glu Arg Ala Leu Phe Tyr Ala
                       535
                                          540
Ala Glu Ile Leu Cys Gly Leu Glu Asp Leu His Arg Glu Asn Thr Val
                  550
                                      555
Tyr Arg Asp Leu Lys Pro Glu Asn Ile Leu Leu Asp Asp Tyr Gly His
                                  570
Ile Arg Ile Ser Asp Leu Gly Leu Ala Val Lys Ile Pro Glu Gly Asp
                              585
                                                 590
Leu Ile Arg Gly Arg Val Gly Thr Val Gly Tyr Met Ala Pro Glu Val
                          600
                                             605
Leu Asn Asn Gln Arg Tyr Gly Leu Ser Pro Asp Tyr Trp Gly Leu Gly
                      615
                                          620
Cys Leu Ile Tyr Glu Met Ile Glu Gly Gln Ser Pro Phe Arg Gly Arg
                   630
                                      635
Lys Glu Lys Val Lys Arg Glu Glu Val Asp Arg Arg Val Leu Glu Thr
              645
                                  650
Glu Glu Val Tyr Ser His Lys Phe Ser Glu Glu Ala Lys Ser Ile Cys
                              665
Lys Met Leu Leu Thr Lys Asp Ala Lys Gln Arg Leu Gly Cys Gln Glu
                         680 . 685
Glu Gly Ala Ala Glu Val Lys Arg His Pro Phe Phe Arg Asn Met Asn
                   695
                                          700
Phe Lys Arg Leu Glu Ala Gly Met Leu Asp Pro Pro Phe Val Pro Asp
                   710
                                      715
Pro Arg Ala Val Tyr Cys Lys Asp Val Leu Asp Ile Glu Gln Phe Ser
               725
                                   730
Thr Val Lys Gly Val Asn Leu Asp His Thr Asp Asp Asp Phe Tyr Ser
           740
                               745
Lys Phe Ser Thr Gly Ser Val Ser Ile Pro Trp Gln Asn Glu Met Ile
                          760
Glu Thr Glu Cys Phe Lys Glu Leu Asn Val Phe Gly Pro Asn Gly Thr
                      775
                                         780
Leu Pro Pro Asp Leu Asn Arg Asn His Pro Pro Glu Pro Pro Lys Lys
                  790
                                     795
Gly Leu Leu Gln Arg Leu Phe Lys Arg Gln His Gln Asn Asn Ser Lys
                                  810
               805
Ser Ser Pro Ser Ser Lys Thr Ser Phe Asn His His Ile Asn Ser Asn
          820
                           825
His Val Ser Ser Asn Ser Thr Gly Ser Ser
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<211> 1902

<212> DNA

<213> Artificial Sequence

<220>

<223> EGFP-Jnk1 fusion

<220>

<221> CDS

| <400 |)> 4 | 14 | | | | | | | | | | | | | | |
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| atg Met 1 | gtg Val | agc Ser | aag Lys | ggc Gly | gag Glu | gag Glu | ctg Leu | ttc Phe | acc Thr 10 | ggg Gly | gtg Val | gtg Val | ccc Pro | atc Ile 15 | ctg Leu | 48 |
| gtc | | | | | | | | | cac | | ttc Phe | | | tcc | | 96 |
| gag | ggc | gag | ggc | gat | gcc | acc | tac | 25 ggc | aag | ctg | acc Thr | ctg | 30 aag | ttc Phe | atc Tle | 144 |
| | _ | 35 | _ | _ | | | 40 | | | | acc | 45 | | | | 192 |
| Cys | Thr 50 | Thr | Gly | Lys | Leu | Pro 55 | Val | Pro | Trp | Pro | Thr 60 | Leu | Val | Thr | Thr | |
| ctg Leu 65 | acc Thr | tac Tyr | ggc Gly | gtg Val | cag Gln 70 | tgc Cys | ttc Phe | agc Ser | cgc Arg | tac Tyr 75 | ccc Pro | gac Asp | cac His | atg Met | aag Lys 80 | 240 |
| _ | | _ | | | _ | | - | _ | | - | ggc Gly | | | | | 288 |
| cgc Arg | acc Thr | atc Ile | ttc Phe 100 | ttc Phe | aag Lys | gac Asp | gac Asp | ggc Gly 105 | aac Asn | tac Tyr | aag Lys | acc Thr | cgc Arg 110 | gcc Ala | gag Glu | 336 |
| gtg Val | aag Lys | ttc Phe 115 | gag | ggc Gly | gac Asp | acc Thr | ctg Leu 120 | gtg Val | aac Asn | cgc Arg | atc Ile | gag Glu 125 | ctg Leu | aag Lys | ggc Gly | 384 |
| | | ttc | | | | | aac | | | | cac His 140 | aag | | | | 432 |
| | tac | | | | | gtc | | | | | gac Asp | | | | | 480 |
| ggc | | | | | ttc | | | | | aac | atc Ile | | | | agc | 528 |
| gtg Val | cag Gln | ctc Leu | gcc Ala 180 | gac | cac His | tac Tyr | cag Gln | cag Gln 185 | aac | acc Thr | ccc Pro | atc Ile | ggc Gly 190 | gac | ggc Gly | 576 |
| | | Leu | ctg | | | | | tac | | | acc Thr | | tcc | | | 624 |
| agc Ser | Lys | 195 gac Asp | ccc Pro | aac Asn | gag Glu | aag Lys 215 | cgc | gat Asp | cac His | atg Met | gtc Val 220 | ctg | ctg Leu | gag Glu | ttc Phe | 672 |
| Val | | | | | Ile | act | | | | | gag Glu | | | | | 720 |
| | | | | Arg | | | | | Met | agc | aga Arg | | | | gac | 768 |
| aac Asn | aat Asn | ttt Phe | Tyr | Ser | gta Val | gag Glu | att Ile | Gly | 250 gat Asp | tct Ser | aca Thr | ttc Phe | Thr | gtc | ctg Leu | 816 |
| | | Tyr | Gln | aat | | | Pro | Ile | | | gga Gly | Ala | | | | 864 |
| gta Val | Cys | Ala | gct | tat Tyr | gat Asp | Ala | 280 att Ile | ctt | gaa Glu | aga Arg | aat Asn | Val | gca Ala | atc Ile | aag Lys | 912 |
| aag | 290 cta | | cga | cca | ttt | 295 cag | aat | cag | act | cat | 300 gcc | | cgg | gcc | tac | 960 |

| | Leu | Ser | Arg | | Phe | Gln | Asn | Gln | Thr. | His 315 | Ala | Lys | Arg | Ala | Tyr 320 | |
|-------------------|---------------------|-------------------|-------------------|-------------------|-----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-----------------------|-------------------|-------------------|-------------------|------|
| 305 aga | gag | cta | gtt | ctt | 310 atg Met | aaa | tgt | gtt | aat | cac | aaa | aat | ata Tle | att | ggc | 1008 |
| _ | | | | 325 | | | | | 330 | | | | | 335 | | 1056 |
| Leu | Leu | Asn | Val 340 | Phe | aca Thr | Pro | Gln | Lys 345 | Ser | Leu | Glu | Glu | 250 | GIn | Asp | 1000 |
| gtt Val | tac Tyr | ata Ile 355 | gtc Val | atg Met | gag Glu | ctc Leu | atg Met 360 | gat Asp | gca Ala | aat Asn | ctt Leu | tgc Cys 365 | caa Gln | gtg Val | att Ile | 1104 |
| cag Gln | atg Met 370 | gag | cta Leu | gat Asp | cat His | gaa Glu 375 | aga Arg | atg Met | tcc Ser | tac Tyr | ctt Leu 380 | ctc Leu | tat Tyr | cag Gln | atg Met | 1152 |
| ctg Leu 385 | tat | gga Gly | atc Ile | aag Lys | cac His 390 | ctt | cat His | tct Ser | gct Ala | gga Gly 395 | att Ile | att Ile | cat His | cgg Arg | gac Asp 400 | 1200 |
| tta | aag Lys | ccc Pro | agt Ser | aat Asn 405 | ata Ile | gta Val | gta Val | aaa Lys | tct Ser 410 | gat | tgc Cys | act Thr | ttg Leu | aag Lys 415 | att Ile | 1248 |
| ctt Leu | gac Asp | ttc Phe | ggt Gly 420 | cta | gcc Ala | agg Arg | act Thr | gca Ala 425 | gga | acg Thr | agt Ser | ttt Phe | atg Met 430 | atg Met | acg Thr | 1296 |
| cct Pro | tat Tyr | gta Val 435 | ata | act Thr | cgc Arg | tac Tyr | tac Tyr 440 | aga | gca Ala | ccc Pro | gag Glu | gtc Val 445 | atc Ile | ctt Leu | ggc Gly | 1344 |
| atg Met | ggc Gly 450 | tac | aag Lys | gaa Glu | aac Asn | gtg Val 455 | gat | tta Leu | tgg Trp | tct Ser | gtg Val 460 | ggg ggg | tgc Cys | att Ile | atg Met | 1392 |
| gga Gly 465 | gaa | atg Met | gtt Val | tgc Cys | cac His 470 | aaa | atc Ile | ctc Leu | ttt Phe | cca Pro 475 | gga Gly | agg Arg | gac Asp | tat Tyr | att Ile 480 | 1440 |
| gat | cag Gln | tgg Trp | aat Asn | aaa Lys 485 | gtt Val | att Ile | gaa Glu | cag Gln | ctt Leu 490 | gga | aca Thr | cca Pro | tgt Cys | cct Pro 495 | gaa Glu | 1488 |
| ttc Phe | atg Met | aag Lys | aaa Lys 500 | ctq | caa Gln | cca Pro | aca Thr | gta Val 505 | agg Arg | act Thr | tac Tyr | gtt Val | gaa Glu 510 | aac Asn | aga Arg | 1536 |
| cct Pro | aaa Lys | tat Tyr 515 | act | gga Gly | tat Tyr | agc Ser | ttt Phe 520 | gag Glu | aaa Lys | ctc Leu | ttc Phe | cct Pro 525 | gat Asp | gtc Val | ctt Leu | 1584 |
| ttc Phe | cca Pro 530 | gct Ala | gac Asp | tca Ser | gaa Glu | cac His 535 | aac | aaa | ctt Leu | aaa Lys | gcc Ala 540 | Ser | cag Gln | gca Ala | agg Arg | 1632 |
| gat Asp 545 | ttg Leu | tta | tcc Ser | aaa Lys | atg Met 550 | ctg Leu | gta Val | ata | gat Asp | gca Ala 555 | tct Ser | aaa | agg Arg | ato | tct Ser 560 | 1680 |
| αt.a | gat | gaa Glu | gct Ala | ctc Leu 565 | caa Gln | cac | ccg Pro | tac Tyr | ato Ile 570 | Asn | gtc Val | tgg Trp | tat Tyr | gat Asp 575 | cct Pro | 1728 |
| tct Ser | gaa Glu | gca Ala | gaa Glu 580 | gct Ala | сса | cca Pro | cca Pro | aag Lys 585 | ato Ile | cct | gac Asp | aag Lys | cag Gln 590 | ı Leı | a gat n Asp | 1776 |
| gaa Glu | agg ı Arg | gaa Glu 595 | cac His | aca | ata : Ile | gaa Glu | gaç Glu | ı tgç ı Trp | j aaa | gaa Glu | ttg Lev | g ata 1 Ile 605 | e Tyr | aaq Lys | g gaa s Glu | 1824 |
| gtt Val | ato L Met 610 | g gad Asp | tto | gag ıGlü | g gag ı Glü | aga Arç 615 | aco Thi | aag | g aat s Asr | gga Gly | gtt Val 620 | l Ile | a cgg e Arg | g Gly | g cag y Gln | 1872 |
| cco Pro 625 | tct Sei | cct | tta Lei | a gca a Ala | a cag a Glr 630 | g gtg Na] | g cag | g caq n Glr | g tga n | a | | | | | | 1902 |

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<210> 45
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<211> 633

<212> PRT

<213> Artificial Sequence

<220>

<223> EGFP-Jnk1 fusion

<400> 45

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Gln Met Glu Leu Asp His Glu Arg Met Ser Tyr Leu Leu Tyr Gln Met
                   375
Leu Cys Gly Ile Lys His Leu His Ser Ala Gly Ile Ile His Arg Asp
                                       395
                   390
Leu Lys Pro Ser Asn Ile Val Val Lys Ser Asp Cys Thr Leu Lys Ile
                                   410
               405
Leu Asp Phe Gly Leu Ala Arg Thr Ala Gly Thr Ser Phe Met Met Thr
                                425
          420
Pro Tyr Val Val Thr Arg Tyr Tyr Arg Ala Pro Glu Val Ile Leu Gly
                            440
Met Gly Tyr Lys Glu Asn Val Asp Leu Trp Ser Val Gly Cys Ile Met
                       455
Gly Glu Met Val Cys His Lys Ile Leu Phe Pro Gly Arg Asp Tyr Ile
                    470
                                       475
Asp Gln Trp Asn Lys Val Ile Glu Gln Leu Gly Thr Pro Cys Pro Glu
               485
                                   490
Phe Met Lys Lys Leu Gln Pro Thr Val Arg Thr Tyr Val Glu Asn Arg
                                505
                                                   510
            500
Pro Lys Tyr Ala Gly Tyr Ser Phe Glu Lys Leu Phe Pro Asp Val Leu
                                              525
                            520
Phe Pro Ala Asp Ser Glu His Asn Lys Leu Lys Ala Ser Gln Ala Arg
                       535
Asp Leu Leu Ser Lys Met Leu Val Ile Asp Ala Ser Lys Arg Ile Ser
                                       555
                   550
Val Asp Glu Ala Leu Gln His Pro Tyr Ile Asn Val Trp Tyr Asp Pro
                                  570
                                                        575
               565
Ser Glu Ala Glu Ala Pro Pro Pro Lys Ile Pro Asp Lys Gln Leu Asp
            580
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Glu Arg Glu His Thr Ile Glu Glu Trp Lys Glu Leu Ile Tyr Lys Glu
                           600
Val Met Asp Leu Glu Glu Arg Thr Lys Asn Gly Val Ile Arg Gly Gln
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Pro Ser Pro Leu Ala Gln Val Gln Gln
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 Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
 gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc
                                                                      96
```

| Val | Glu | Leu | | Gly | Asp | Val | Asn | | His | Lys | Phe | Ser | | Ser | Gly | |
|------------------|------------|------------|--------------|-----|------------|------------|------------|------------|-----|------------|------------|------------|----------------|-----|------------|------|
| nan | aac | gag | 20 | αat | gcc | acc | tac | 25 aac | aaq | cta | acc | cta | 30 aag | ttc | atc | 144 |
| Glu | Gly | Glu 35 | Gly | Asp | Ala | Thr | Tyr 40 | Gly | Lys | Leu | Thr | Leu 45 | Lys | Phe | Ile | |
| tgc | acc | acc | ggc | aag | ctg | ccc | gtg | ccc | tgg | CCC | acc | ctc | gtg | acc | acc | 192 |
| _ | 50 | | | | Leu | 55 | | | | | 60 | | | | | 240 |
| ctg | acc | tac | ggc | gtg | cag | tgc | ttc | agc | cgc | tac | CCC | gac | cac | atg | aag | 240 |
| 65 | | | | | Gln 70 | | | | | 75 | | | | | 80 | 200 |
| cag | cac | gac | ttc | ttc | aag | tcc | gcc | atg | ccc | gaa | ggc | tac | gtc | cag | gag | 288 |
| | | | | 85 | Lys | | | | 90 | | | | | 95 | | |
| cgc | acc | atc | ttc | ttc | aag | gac | gac | ggc | aac | tac | aag | acc | cgc | gcc | gag | 336 |
| Arg | Thr | Ile | Phe 100 | Phe | Lys | Asp | Asp | G1y 105 | Asn | Tyr | ьys | Thr | 110 | АТА | GIU | |
| gtg | aag | ttc | gag | ggc | gac | acc | ctg | gtg | aac | cgc | atc | gag | ctg | aag | ggc | 384 |
| Val | Lys | Phe 115 | Glu | Gly | Asp | Thr | Leu 120 | Val | Asn | Arg | Ile | Glu 125 | Leu | Lys | Gly | |
| atc | gac | ttc | aag | gag | gac | ggc | aac | atc | ctg | ggg | cac | aag | ctg | gag | tac | 432 |
| Ile | Asp 130 | Phe | Lys | Glu | Asp | Gly 135 | Asn | Ile | Leu | Gly | His 140 | Lys | Leu | Glu | Tyr | |
| aac | tac | aac | agc | cac | aac | gtc | tat | atc | atg | gcc | gac | aag | cag | aag | aac | 480 |
| | Tyr | Asn | Ser | His | Asn | Val | Tyr | Ile | Met | | Asp | Lys | Gln | Lys | | |
| 145 | 2+4 | 224 | ata | 226 | 150 ttc | 220 | atc | cac | cac | 155 aac | atc | nan | gac | aac | 160 agc | 528 |
| Glv | Tle | Tivs | Val | Asn | Phe | Lvs | Ile | Ara | His | Asn | Ile | Glu | Asp | Gly | Ser | 020 |
| O _L y | 110 | _, _ | | 165 | | -1- | | 5 | 170 | - | | | - | 175 | | |
| gtg | cag | ctc | gcc | gac | cac | tac | cag | cag | aac | acc | ccc | atc | ggc | gac | ggc | 576 |
| | | | 180 | | His | | | 185 | | | | | 190 | | | |
| ccc | gtg | ctg | ctg | ccc | gac | aac | cac | tac | ctg | agc | acc | cag | tcc | gcc | ctg | 624 |
| Pro | Val | Leu 195 | Leu | Pro | Asp | Asn | His 200 | Tyr | Leu | Ser | Thr | 205 | ser | Ата | ьeu | |
| agc | aaa | | aca | aac | gag | aaσ | | gat | cac | atq | atc | | ctg | qaq | ttc | 672 |
| Ser | Lys 210 | Asp | Pro | Asn | Glu | Lys 215 | Arg | Āsp | His | Met | Val 220 | Leu | Leu | Glu | Phe | |
| ata | | acc | acc | aaa | atc | | ctc | aac | atq | gac | | ctg | tac | aag | tcc | 720 |
| Val | Thr | Ala | Ala | Gly | Ile | Thr | Leu | бĺу | Met | Āsp | Glu | Leu | Tyr | Lys | Ser | |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 | 7.60 |
| gga | ctc | aga | tct | cga | ggg Gly | aaa | atg | tct | Cag | gag | agg | Pro | acg Thr | Phe | tac Tvr | 768 |
| _ | | | | 245 | | | | | 250 | | | | | 255 | | |
| cgg | cag | gag | ctg | aac | aag | aca | atc | tgg | gag | gtg | CCC | gag | cgt | tac | cag | 816 |
| _ | | | 260 | | Lys | | | 265 | | | | | 270 | | | |
| aac | ctg | tct | cca | gtg | ggc | tct | ggc | gcc | tat | ggc | tct | gtg | tgt | gct | gct | 864 |
| | | 275 | | | Gly | | 280 | | | | | 285 | | | | |
| ttt | gac | aca | aaa | acg | ggg | tta | cgt | gtg | gca | gtg | aag | aag | ctc | tcc | aga | 912 |
| | 290 | | | | Gly | 295 | | | | | 300 | | | | | |
| cca | ttt | cag | tcc | ato | att | cat | gcg | aaa | aga | acc | tac | aga | gaa | ctg | cgg | 960 |
| | | Gln | Ser | Ile | : Ile | | Ala | Lys | Arg | Thr 315 | | Arg | GLu | Leu | 320 | |
| 305 | | 222 | cat | ato | 310 aaa | | gaa | aat | gta | | | cto | tta | gac | | 1008 |
| Leu | Leu | Lvs | His | Met | Lys | His | Glu | Asn | Val | . Ile | Gly | Leu | Leu | Asp | Val | |
| | | | | 325 | <u>,</u> | | | | 330 |) | | | | 335 | 1 | 1051 |
| ttt | aca | cct | gca | agg | tct | ctg | gag | gaa | tto | aat | gat | gto | tat | ctg | gtg | 1056 |
| Ph∈ | Thr | Pro | о Ата 340 | | ser | тел | GIU | 345 | | : ASI | . ASL | , val | . 1 y 1 350 | | . Val | |
| acc | cat | cto | | | g gca | gat | cto | | | att | gto | g aaa | | | aag | 1104 |

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Thr His Leu Met Gly Ala Asp Leu Asn Asn Ile Val Lys Cys Gln Lys
                            360
                                                 365
ctt aca gat gac cat gtt cag ttc ctt atc tac caa att ctc cga ggt
                                                                     1152
Leu Thr Asp Asp His Val Gln Phe Leu Ile Tyr Gln Ile Leu Arg Gly
                        375
cta aag tat ata cat tca gct gac ata att cac agg gac cta aaa cct
                                                                     1200
Leu Lys Tyr Ile His Ser Ala Asp Ile Ile His Arg Asp Leu Lys Pro
                     390
                                         395
agt aat cta gct gtg aat gaa gac tgt gag ctg aag att ctg gat ttt
                                                                     1248
Ser Asn Leu Ala Val Asn Glu Asp Cys Glu Leu Lys Ile Leu Asp Phe
                                     410
gga ctg gct cgg cac aca gat gat gaa atg aca ggc tac gtg gcc act
                                                                     1296
Gly Leu Ala Arg His Thr Asp Asp Glu Met Thr Gly Tyr Val Ala Thr
            420
agg tgg tac agg gct cct gag atc atg ctg aac tgg atg cat tac aac
                                                                     1344
Arg Trp Tyr Arg Ala Pro Glu Ile Met Leu Asn Trp Met His Tyr Asn
        435
                            440
                                                445
cag aca gtt gat att tgg tca gtg gga tgc ata atg gcc gag ctg ttg
                                                                     1392
Gln Thr Val Asp Ile Trp Ser Val Gly Cys Ile Met Ala Glu Leu Leu
                        455
                                            460
act gga aga aca ttg ttt cct ggt aca gac cat att gat cag ttg aag
                                                                     1440
Thr Gly Arg Thr Leu Phe Pro Gly Thr Asp His Ile Asp Gln Leu Lys
                    470
                                        475
ctc att tta aga ctc gtt gga acc cca ggg gct gag ctt ttg aag aaa
                                                                     1488
Leu Ile Leu Arg Leu Val Gly Thr Pro Gly Ala Glu Leu Leu Lys Lys
                                    490
atc tcc tca gag tct gca aga aac tat att cag tct ttg act cag atg
                                                                     1536
Ile Ser Ser Glu Ser Ala Arg Asn Tyr Ile Gln Ser Leu Thr Gln Met
                                505
                                                    510
ccg aag atg aac ttt gcg aat gta ttt att ggt gcc aat ccc ctg gct
                                                                    1584
Pro Lys Met Asn Phe Ala Asn Val Phe Ile Gly Ala Asn Pro Leu Ala
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                                                525
gtc gac ttg ctg gag aag atg ctt gta ttg gac tca gat aag aga att
                                                                    1632
Val Asp Leu Leu Glu Lys Met Leu Val Leu Asp Ser Asp Lys Arg Ile
                        535
aca gcg gcc caa gcc ctt gca cat gcc tac ttt gct cag tac cac gat
                                                                    1680
Thr Ala Ala Gln Ala Leu Ala His Ala Tyr Phe Ala Gln Tyr His Asp
                   550
                                        555
cct gat gat gaa cca gtg gcc gat cct tat gat cag tcc ttt gaa agc
                                                                    1728
Pro Asp Asp Glu Pro Val Ala Asp Pro Tyr Asp Gln Ser Phe Glu Ser
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                                   570
agg gac ctc ctt ata gat gag tgg aaa agc ctg acc tat gat gaa gtc
                                                                    1776
Arg Asp Leu Leu Ile Asp Glu Trp Lys Ser Leu Thr Tyr Asp Glu Val
                                585
atc agc ttt gtg cca cca ccc ctt gac caa gaa gag atg gag tcc tga
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<212> PRT

<213> Artificial Sequence

<220>

<223> EGFP-p38 fusion

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Leu Ile Leu Arg Leu Val Gly Thr Pro Gly Ala Glu Leu Leu Lys Lys 490 485 Ile Ser Ser Glu Ser Ala Arg Asn Tyr Ile Gln Ser Leu Thr Gln Met 505 Pro Lys Met Asn Phe Ala Asn Val Phe Ile Gly Ala Asn Pro Leu Ala 520 Val Asp Leu Leu Glu Lys Met Leu Val Leu Asp Ser Asp Lys Arg Ile 535 Thr Ala Ala Gln Ala Leu Ala His Ala Tyr Phe Ala Gln Tyr His Asp 550 555 560 Pro Asp Asp Glu Pro Val Ala Asp Pro Tyr Asp Gln Ser Phe Glu Ser 570 565 Arg Asp Leu Leu Ile Asp Glu Trp Lys Ser Leu Thr Tyr Asp Glu Val 585 Ile Ser Phe Val Pro Pro Leu Asp Gln Glu Met Glu Ser 600 <210> 48 <211> 2907 <212> DNA <213> Artificial Sequence <220> EGFP-p85alpha fusion <223> <220> <221> CDS <222> (1)..(2904) <400> 48 atg gtg agc aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg 48 Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu 10 gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc 96 Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly 25 gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc 144 Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile 45 40 35 tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc 192 Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr 60 ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag 240 Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys 75 70 65 cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag 288 Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu 90 336 cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu 105 100

384

gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc

| 115 120 120 act cyact ttc aag gag gac gac aac atc ctg ggg cac aag ctg gag tac 11e Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr 130 aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn 145 150 155 160 175 ggc atc aag gtg aac ttc aag atc cgc cac aac acc acc gag gac gcc Gly Ile Lys Val Asn Phe Lys Ile Arg Mis Asn Ile Glu Asp Cly Ser 165 170 175 gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly 185 190 190 acc gtg ctg ctg ccc gac aac cac tac ctg ag acc acc tac cgc gac ggc 205 agc aaa gac ccc aac gag aag ecc tac cat gag cac gac gac gac 376 Val Gln Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu 205 agc aaa gac ccc aac gag aag ecc gat cac cat ggc gac ggc 376 yga cac gcc gcc ggg atc acc tac cgg aag acc acc acc gcc gcc tg 205 agc aaa gac ccc aac gag aag ecc gat cac atg gtc ctg ctg ctg 207 agc aaa gac ccc aac gag aag ecc gat cac atg gtc ctg gac gtc 376 yga acc gcc gcg gga acc act tac ggc atg gac gac gac gac gac 377 acc gtg cac gcc gcc gga agc cac tac cac atg gtc ctg ctg gac gtc 378 yga acc gcc gcc ggg atc act ctc ggc atg gac gac gac gac 378 gat tat aaa aag gac gat gac gac gac gac gac 370 yga ctc aga ttc atg atg tcg tag ggg gac tac acg tac gac gac 381 yle Leu Arg Ser Met Ser Ala Glu Gly Tyr Gln Tyr Arg Ala Leu 370 yga ctc gga acc aga gac gac gac gac gac gac 381 yle Leu Thr Val Asn Lys Gly Ser Leu Val Ala Leu Gly Phe Ser Asp 275 yac acg gac acc aga gac gac 386 yle Thr Tyr Slys Glu Arg Glu Glu Asp Ile Asp Leu His Leu Gly Phe Ser Asp 275 yac aca gag acc agg ctg acc gac acc acc acc acc acc acc acc ac | Val | Lys | | Glu | Gly | Asp | | | Val | Asn | Arg | Ile | Glu 125 | Leu | Lys | Gly | |
|--|-------|--------|------------|-------------|-------|------------|------------|-------|-------|---------|-------|-----------|------------|-------|-------|------------|-------------|
| 11e Aap Phe Lys Glu Aap Gly Asn Ile Leu Gly His Lys Leu Glu Tyr 130 130 130 130 130 130 130 130 | 2+2 | ~~~ | 115 | 224 | aaa | aac | | | atc | cta | aaa | cac | | cta | gag | tac | 432 |
| aac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gin Lys Asn 145 150 150 160 165 160 165 160 165 160 165 165 160 165 165 165 165 165 165 165 165 165 165 | Ile | Asp | Phe | Lys | Glu | Asp | Gly | Asn | Ile | Leu | Gly | His | Lys | Leu | Ğlū | Tyr | |
| Ash Tyr Ash Ser His Ash Val Tyr Ile Met Ala Asp Lys Gli Lys Ash 145 150 150 160 160 160 160 160 160 160 160 160 16 | | 130 | | | | | | + - + | ata | a t or | acc | | aan | cad | aad | aac | 480 |
| 145 | aac | tac | aac | agc | cac | Aac | gic Val | Tur | Tle | Met | Ala | Asp | Lvs | Gln | Lvs | Asn | 100 |
| Second S | | TÀT | ASII | ser | птэ | | Vai | ı yı | 110 | 1100 | | | | | -1- | 160 | |
| Second S | 745 | atc | 220 | ata | aac | | aad | atc | cac | cac | | atc | gag | gac | qqc | agc | 528 |
| 165 | Clu | Tlo | Tuc | y cy Val | Aen | Phe | Lus | Tle | Ara | His | Asn | Ile | Glu | Asp | Ğĺv | Ser | |
| Second S | GIY | 116 | цуз | var | | 1110 | Lyo | | 9 | | | | | - | 175 | | |
| Val Leu Ala Asp His Tyr Gln Asn Thr Pro Ile Gly Asp Gly 180 185 190 185 190 624 Fro Val Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu 195 200 205 | ata | car | ctc | acc | | cac | tac | caq | caq | | acc | ccc | atc | ggc | gac | ggc | 576 |
| 180 | Val | Gln | Leu | Ala | Asp | His | Tvr | Gln | Gln | Asn | Thr | Pro | Ile | Gly | Asp | Gly | |
| CCC gtg ctg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gtc ctg Pro Val Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu 195 | | V | | | | | - | | | | | | | 190 | | | |
| Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu 195 | ccc | ata | cta | cta | ccc | gac | aac | cac | tac | ctg | agc | acc | cag | tcc | gcc | ctg | 624 |
| ago aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe 210 210 210 220 220 235 236 236 237 240 237 240 238 236 237 240 238 237 240 238 238 238 240 239 230 235 240 240 240 250 240 270 281 281 282 283 283 284 284 285 286 287 286 287 287 287 288 288 288 288 288 288 288 | Pro | Val | Leu | Leu | Pro | Ásp | Asn | His | Tyr | Leu | Ser | Thr | Gln | Ser | Ala | Leu | |
| Ser Lys Asp Pro Asn Giu Lys Arg Asp His Met Val Leu Giu Phe 210 | | | 195 | | | | | 200 | | | | | 205 | | | | |
| Ser Lys Asp Pro Asn Giu Lys Arg Asp His Met Val Leu Giu Phe 210 | agc | aaa | gac | ccc | aac | gag | aag | cgc | gat | cac | atg | gtc | ctg | ctg | gag | ttc | 672 |
| 210 | Ser | Lys | Āsp | Pro | Asn | Glu | Lys | Arg | Asp | His | Met | Val | Leu | Leu | Glu | Phe | |
| Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser 225 230 230 235 240 240 235 240 236 245 245 245 245 245 255 246 245 245 245 255 245 245 255 245 245 255 245 24 | | 210 | | | | | 215 | | | | | 220 | | | | | |
| Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser 225 230 230 235 240 240 235 240 236 245 245 245 245 245 255 246 245 245 245 255 245 245 255 245 245 255 245 24 | gtg | acc | gcc | gcc | ggg | atc | act | ctc | ggc | atg | gac | gag | ctg | tac | aag | tcc | 720 |
| gga ctc aga tct atg agt gct gag ggg tac cag tac aga gcg ctg tat 768 Gly Leu Arg Ser Met Ser Ala Glu Gly Tyr Gln Tyr Arg Ala Leu Tyr 245 gat tat aaa aag gaa aga gaa gaa gat att gac ttg cac ttg ggt gac 816 Asp Tyr Lys Lys Glu Arg Glu Glu Arg Fle Asp Leu His Leu Gly Asp 260 270 285 270 286 270 286 270 286 270 286 270 286 270 286 270 286 270 286 270 286 270 286 270 286 270 286 270 286 275 286 270 286 275 286 270 286 275 286 270 286 275 286 270 286 275 286 270 286 275 286 286 275 286 286 286 286 286 286 286 286 286 286 | Val | Thr | Āla | Ala | Gly | Ile | Thr | Leu | Gly | Met | Asp | Glu | Leu | Tyr | Lys | Ser | |
| Gly Leu Arg Ser Met Ser Ala Glu Gly Tyr Gln Tyr Arg Ala Leu Tyr 245 | 225 | | | | | | | | | | | | - | | | | 5 60 |
| 245 | gga | ctc. | aga | tct | atg | agt | gct | gag | ggg | tac | cag | tac | aga | gcg | ctg | tat | 768 |
| gat tat aaa aga gaa gaa gat ttg cttg ggt gac 816 Asp Tyr Lys Lys Glu Glu Glu Asp The Asp Leu Leu Leu Asp 270 281 270 281 270 281 | Gly | Leu | Arg | Ser | Met | Ser | Ala | Glu | Gly | | Gln | Tyr | Arg | Ala | Leu | Tyr | |
| Asp Tyr Lys Lys Glu Arg Glu Glu Asp Ile Asp Leu His Leu Gly Asp 260 ata ttg act gtg aat aaa ggg tcc tta gta gct ctt gga ttc agt gat 11e Leu Thr Val Asn Lys Gly Ser Leu Val Ala Leu Gly Phe Ser Asp 275 gga cag gaa gcc agg cct gaa gaa att ggc tgg tta aat ggc tat aat 912 Glu Gln Glu Ala Arg Pro Glu Glu Ile Gly Trp Leu Asn Gly Tyr Asn 290 gaa acc aca ggg gaa agg ggg gac ttt ccg gga act tac gta gaa tat ggc att gga agg acc agg ggg gac ttt ccg gga act tac gta gaa tat ggc att gga agg agg agg act acc acc aca aca cac agg gaa act acc acc aca aca cac acc acc acc a | | | | | | | | | | | | | | | | | 016 |
| ata ttg act gtg aat aaa ggg tcc tta gta gct ctt gga ttc agt gat gat ggg agg gaa gcc agg aa gcc agg cct gaa aaa at ggc tgg tta aat ggc tat aat ggg aa acc aca ggg gaa agc agg aag aaa at ggc tgg tta aat ggc tat aat ggc glu Ala Arg Pro Glu Glu Ile Gly Trp Leu Arn Gly Tyr Arn 290 gaa acc aca ggg gaa agg ggg ggc gac ttt ccg gga act tac gta gaa tat ggc glu Trp Trp Leu Arn Gly Tyr Arn 305 att gga agg aaa aaa atc tcg cct ccc aca aag ccc cgg cca ctt led Gly Arg Lys Lys Ile Ser Pro Pro Trp Trp Ly Pro Arg Pro Pro Arg Pro Pro 325 cgg cct ctt cct gtt gca cca ggt tct tcg aaa act gaa gca gtt 1056 Arg Pro Leu Pro Val Ala Pro Gly Ser Ser Lys Trn Glu Ala Arsp Val 340 gaa caa caa gct ttg act ccc ggt ccc gat ctt gca gag cag ttt gcc cct 1104 Glu Gln Gln Ala Leu Trr Leu Pro Arg Lys Lys Ile Ser Pro Pro Trn Pro Lys Pro Arg Pro Pro 355 cct gac att gcc ccg cct ctt ctt atc aag ctc gt gaa gcc att gaa gcc att gaa gaa gcc aga gcc gat gat gt led Glu Gln Gln Ala Leu Trr Leu Pro Arg Leu Ala Glu Gln Pro Arg Pro Arg Pro Pro Leu Leu Ile Lys Leu Val Glu Ala Arg Gly Ser Trr Leu Tyr Arg Glu Ala Arg Pro 1104 Arg Pro Leu Pro Val Arg Gly Ser Trr Leu Tyr Arg Trr Gln Ser | gat | tat | aaa | aag | gaa | aga | gaa | gaa | gat | att | gac | ttg | cac | ttg | ggt | gac | 81.0 |
| ata ttg act gtg aat aaa ggg tcc tta gta gct ctt gga ttc agt gat | Asp | Tyr | Lys | Lys | Glu | Arg | Glu | Glu | Asp | Ile | Asp | Leu | His | Leu | GTĀ | Asp | |
| The Leu Thr Val Asn Lys Gly Ser Leu Val Ala Leu Gly Phe Ser Asp 285 280 285 285 286 | | | | | | | | | | | | | | | | | 961 |
| gga cag gaa gcc agg cct gaa gaa att ggc tgg tta aat ggc tat aat ggc gaa gcc gga gaa att ggc tgg tta aat ggc tat aat ggc gas agg gga acg gas acg ggg gac ttt cgg gaa act tac gta gaa tat gac aca agg gg gaa agg ggg gac ttt cgg gga act tac gta gaa tat ggc latt aat ggc latt gaa latt gas act tac gas gaa att tac ggc latt gas latt ggc latt gas latt ggc latt aat ggc latt gas latt gas latt ggc latt aat ggc latt gas latt ggc latt aat ggc latt gas latt ggc latt aat ggc latt gas latt ggc latt gas latt ggc latt gas latt gas latt ggc latt gas latt ggc latt gas latt ggc latt gas gas gac gat ggt latt aat ggc latt gas latt gas latt ggc latt gas lat | ata | ttg | act | gtg | aat | aaa | ggg | tcc | tta | gta | gct | CTT | gga | Dho | agt | gat | 004 |
| gga cag gaa gcc agg cag gaa gaa gcc ctc gaa gaa gaa gcc att ggc tta aat ggc ta aat ggc pro 912 Gly Gln Glu Ala Arg Pro Glu | Ile | Leu | | Val | Asn | Lys | Gly | | Leu | Val | Ата | ьеи | GLY | Pne | ser | Asp | |
| Gly Gln Glu Ala Arg Pro Glu Glu Ile Gly Trp Leu Asn Gly Tyr Asn 295 300 gaa acc aca ggg gaa agg ggg gac ttt ccg gga act tac gta gaa tat 960 Glu Thr Thr Gly Glu Arg Gly Asp Phe Pro Gly Thr Tyr Val Glu Tyr 305 att gga agg aaa aaa act ccg cct ccc aca cca aag ccc cgg cca cct I008 Ile Gly Arg Lys Lys Ile Ser Pro Pro Thr Pro Lys Pro Arg Pro Pro 325 cgg cct ctt cct gtt gca cca ggt tct tcg aaa act gaa gca gat gtt 1056 Arg Pro Leu Pro Val Ala Pro Gly Ser Ser Lys Thr Glu Ala Asp Val 345 gaa caa caa gct ttg act ctc ccg gat ctt gca gag cag ttt gcc cct Glu Gln Gln Ala Leu Thr Leu Pro Asp Leu Ala Glu Gln Phe Ala Pro 355 cct gac att gcc ccg cct ctt ctt atc ac aga ccc gtg gaa gcc att gaa 1152 Pro Asp Ile Ala Pro Pro Leu Leu Ile Lys Leu Val Glu Ala Ile Glu 370 aag aaa ggt ctg gaa tgt tca act cta aca aga ccc gg gac cag ttt gac 1152 Asp Leu Ala Glu Leu Arg Gln Leu Arg Gln Leu Asp Cys Asp Thr Pro Ser Val 405 att ctc ctg gac tta cca act cct gtc gtc att cca gca gcc gtt tac aac ccc tct ctc gac att ccc gcg tta ctc ctc gcg gt gac gct ttc aaa ccc tcc ctc gtg Asp Leu Glu Met Ile Asp Val His Val Leu Ala Asp Ala Phe Lys Arg 420 tat ctc ctg gac tta cca act cct gtc att cca gca gcc gtt tac agt Tyr Leu Leu Asp Leu Pro Asn Pro Val Ile Pro Ala Ala Val Tyr Ser 440 445 | | | 275 | | | | | | | | +~~ | ++- | | | + > + | 22t | 912 |
| 290 295 300 gaa acc aca ggg gaa agg ggg gac ttt ccg gaa act tac gta gaa tat 960 Glu Thr Thr Gly Glu Arg Gly Asp Phe Pro Gly Thr Tyr Val Glu Tyr 305 320 att gga agg aaa aaa aca atc tcg cct ccc aca cca aca cca aag ccc cgg cca cct 1008 Ile Gly Arg Lys Lys Ile Ser Pro Pro Thr Pro Lys Pro Arg Pro Pro 325 330 335 cgg cct ctt cct gtt gca cca ggt tct tcg aaa act gaa gca gat gtt 1056 Arg Pro Leu Pro Val Ala Pro Gly Ser Ser Lys Thr Glu Ala Asp Val 340 345 350 gaa caa caa gct ttg act ctc ccg gat ctt gca gag cag ttt gcc cct 360 365 365 cct gac att gcc ccg cct ctt ctt atc aag ctc gg gaa gcc att gaa 1104 Pro Asp Ile Ala Pro Pro Leu Leu Ile Lys Leu Val Glu Ala Ile Glu 370 375 380 aag aaa ggt ctg gaa tgt tca act cta tac aag ctc gtg gaa gcc att gaa 1152 Pro Asp Ile Ala Pro Pro Leu Leu Ile Lys Leu Val Glu Ala Ile Glu 370 375 aag aca ggt ctg gaa ttg tca act cta tac aag aca cag agc ctc agc 1200 Lys Lys Gly Leu Glu Cys Ser Thr Leu Tyr Arg Thr Gln Ser Ser Ser 390 aac ctg gca gaa tta cga cag ctt ctt gat tgt ga aca ccc gtg 1248 Asn Leu Ala Glu Leu Arg Gln Leu Leu Asp Cys Asp Thr Pro Ser Val 400 aac ctg gaa at ac gat gc gac gct tct gc gcc gcc gtt tca aac ccc tcc gtg 1248 <t< td=""><td>gga</td><td>cag</td><td>gaa</td><td>gcc</td><td>agg</td><td>cct</td><td>gaa</td><td>gaa</td><td>att</td><td>ggc</td><td>tgg</td><td>LLd</td><td>Adl</td><td>Glv</td><td>Tur</td><td>aac Aen</td><td>712</td></t<> | gga | cag | gaa | gcc | agg | cct | gaa | gaa | att | ggc | tgg | LLd | Adl | Glv | Tur | aac Aen | 712 |
| gaa acc aca ggg gaa agg ggc ttt ccg gga act tac gta gaa tat 960 Glu Thr Thr Gly Gly Asp Phe Pro Gly Thr Tyr Val Glu Tyr 305 310 310 315 320 | Gly | | Glu | Ala | Arg | Pro | | GIU | iie | GTA | пр | Tea | ASII | СТУ | тут | ASII | |
| Glu Thr Thr Gly Glu Arg Gly Asp Phe Pro Gly Thr Tyr Val Glu Tyr 305 310 320 att gga agg aaa aaa atc tcg cct ccc aca cca aag ccc cgg cca cct 1008 Ite Gly Arg Lys Lys Ile Ser Pro Pro Thr Pro Lys Pro Arg Pro Pro 325 330 335 cgg cct ctt cct gtt gca cca ggt tct tcg aaa act gaa gca gat gtt 1056 Arg Pro Leu Pro Val Ala Pro Gly Ser Ser Lys Thr Glu Ala Asp Val 340 345 350 350 cct gac act gcd ctt gac ctc ccg gat ctt gca gag cag ttt gcc cct glu Glu Gln Gln Ala Leu Thr Leu Pro Asp Leu Ala Glu Gln Phe Ala Pro 355 360 365 cct gac att gcc ccg cct ctt ctt atc aag ccc gtg gaa gcc att gaa 1152 Pro Asp Ile Ala Pro Pro Leu Leu Ile Lys Leu Val Glu Ala Ile Glu 370 375 380 aaa agg ct gaa ttt cca act cta tac aga aca cag agc tcc agc Lys Lys Gly Leu Glu Cys Ser Thr Leu Tyr Arg Thr Gln Ser Ser Ser 390 395 400 aac ctg gca gaa atta cga cag ctt ctt gat tgt gat aca ccc tcc gtg Asn Leu Ala Glu Leu Arg Gln Leu Leu Asp Cys Asp Thr Pro Ser Val 400 425 425 440 445 445 445 445 445 445 | | 290 | | | | | | ~~~ | +++ | cca | aas | | tac | αta | gaa | tat | 960 |
| 305 310 315 320 att gga agg aag agg aag agg agg agg Lys Lys Lys Ile Ser Pro Pro Thr Pro Lys Pro Arg Pro Pro 325 Pro Pro Thr Pro Lys Pro Arg Pro Pro Pro Arg Pro Pro Pro 330 1008 cgg cct ctt cct gtt gca cca ggt tct tcg aaa act gga gca gat gtt Arg Pro Leu Pro Val Ala Pro Gly Ser Ser Lys Thr Glu Ala Arg Val 340 335 1056 gaa caa caa gct ttg act ctc ccg gat ctt gca gag cag cag ttt gcc cct Glu Gln Gln Ala Leu Thr Leu Pro Arg Leu Ala Glu Gln Phe Ala Pro 355 360 365 cct gac att gcc ccg cct ctt ctt atc arg arg gag gac act gac gac gac act gac | gaa | acc | aca mhr | 999 | Glu | Ara | Glv | Asn | Phe | Pro | Glv | Thr | Tvr | Val | Glu | Tvr | |
| att gga agg aaa aaa atc tcg cct ccc aca cca aag ccc cgg cca cct Ile Gly Arg Lys Lys Ile Ser Pro Pro Thr Pro Lys Pro Arg Pro Pro 335 cgg cct ctt cct gtt gca cca ggt tct tcg aaa act gaa gca gat gtt 1056 Arg Pro Leu Pro Val Ala Pro Gly Ser Ser Lys Thr Glu Ala Asp Val 340 gaa caa caa gct ttg act ctc ccg gat ctt gca gag cag ttt gcc cct Glu Gln Gln Ala Leu Thr Leu Pro Asp Leu Ala Glu Gln Phe Ala Pro 355 cct gac att gcc ccg cct ctt ctt atc aag ctc gtg gaa gcc att gaa Pro Asp Ile Ala Pro Pro Leu Leu Ile Lys Leu Val Glu Ala Ile Glu | | | 1111 | GIY | Giu | | GLY | 2101 | 1110 | | | | -1- | | | 320 | |
| The Gly Arg Lys Lys | 303 | aas | agg | 222 | aaa | | tca | cct | ccc | aca | | aag | ccc | cqq | cca | cct | 1008 |
| Sample S | Tle | Glv | Ara | Lvs | Lvs | Tle | Ser | Pro | Pro | Thr | Pro | Lys | Pro | Arg | Pro | Pro | |
| cgg cct ctt cct gtt gca cca ggt tct tcg aaa act gaa gca gat gtt 1056 Arg Pro Leu Pro Val Ala Pro Gly 340 345 Ser Lys Thr Glu Ala Asp Val 350 gaa caa caa gct ttg act ctc ccg gat ctt gca gag cag ttt gcc cct Glu Gln Gln Ala Leu Thr Leu Pro Asp Leu Ala Glu Gln Phe Ala Pro 355 360 360 cct gac att gcc ccg cct ctt ctt atc aag ctc gtg gaa gcc att gaa Pro Pro Leu Leu Ile Lys Leu Val Glu Ala Ile Glu Ala Ile Glu 370 1152 aag aaa ggt ctg gaa tgt tca act cta tac aag aca cag agc cag ttc agc Lys Lys Gly Leu Glu Cys Ser Thr Leu Tyr Arg Thr Gln Ser Ser Ser 390 380 aac ctg gca gaa tta cga cag ctt ctt gat tgt gat aca ccc tcc gtg Asn Leu Ala Glu Leu Arg Gln Leu Leu Asp Cys Asp Thr Pro Ser Val 405 400 gac ttg gaa atg atc gat gtg cac gtt ttg gct gac gct ttc aaa ccg 22 1248 Asp Leu Glu Met Ile Asp Val His Val Leu Ala Asp Ala Phe Lys Arg 420 425 tat ctc ctg gac tta cca aat cct gtc att cca gca gcc gtt tac agt 730 1344 tat ctc ctg gac tta cca aat cct gtc att cca gca gcc gtt tac agt 1344 1344 | 110 | 011 | 9 | -1- | | | | | | 330 | | _ | | | 335 | | |
| Arg Pro Leu Pro Val Ala Pro Gly Ser Ser Lys Thr Glu Ala Asp Val gaa caa caa gct ttg act ctc ccg gat ctt gca gag cag ttt gcc cct 1104 Glu Gln Ala Leu Thr Leu Pro Asp Leu Ala Glu Gln Phe Ala Pro 355 360 360 360 365 365 365 365 365 365 365 365 365 365 365 365 365 360 365 360 365 360 360 360 360 360 360 360 360 360 360 360 360 360 360 360 380 380 380 380 380 380 380 380 380 380 360 360 360 360 360 360 360 360 360 | caa | cct | ctt | cct | qtt | gca | cca | ggt | tct | tcg | aaa | act | gaa | gca | gat | gtt | 1056 |
| gaa caa caa gct ttg act ctc ccg gat ctt gca gag cag ttt gcc cct 1104 Glu Gln Gln Ala Leu Thr Leu Pro Asp Leu Ala Glu Gln Phe Ala Pro 355 cct gac att gcc ccg cct ctt ctt atc aag ctc gtg gaa gcc att gaa 1152 Pro Asp Ile Ala Pro Pro Leu Leu Ile Lys Leu Val Glu Ala Ile Glu 370 aag aaa ggt ctg gaa tgt tca act cta tac aga aca cag agc tcc agc Lys Lys Gly Leu Glu Cys Ser Thr Leu Tyr Arg Thr Gln Ser Ser Ser 390 aac ctg gca gaa tta cga cag ctt ctt gat tgg gat aca ccc tcc gtg 1248 Asn Leu Ala Glu Leu Arg Gln Leu Leu Asp Cys Asp Thr Pro Ser Val 405 gac ttg gaa atg atc gat gtg cac gtt ttg gct gac gct ttc aaa cgc 1296 Asp Leu Glu Met Ile Asp Val His Val Leu Ala Asp Ala Phe Lys Arg 420 tat ctc ctg gac tta cca aat cct gtc att cca gca gcc gtt tac agt 1344 Tyr Leu Leu Asp Leu Pro Asn Pro Val Ile Pro Ala Ala Val Tyr Ser 445 | Arq | Pro | Leu | Pro | Val | Ála | Pro | Gly | Ser | Ser | Lys | Thr | Glu | Ala | Asp | Val | |
| Glu Gln Gln Ala Leu Thr Leu Pro Asp Leu Ala Glu Gln Phe Ala Pro 365 cct gac att gcc ccg cct ctt ctt atc aag ctc gtg gaa gcc att gaa 1152 Pro Asp Ile Ala Pro Pro Leu Leu Ile Lys Leu Val Glu Ala Ile Glu 370 aag aaa ggt ctg gaa tgt tca act cta tac aga aca cag agc tcc agc Lys Lys Gly Leu Glu Cys Ser Thr Leu Tyr Arg Thr Gln Ser Ser Ser 390 aac ctg gca gaa tta cga cag ctt ctt gat tgt gat aca ccc tcc gtg Asn Leu Ala Glu Leu Arg Gln Leu Leu Asp Cys Asp Thr Pro Ser Val 415 gac ttg gaa atg atc gat gtg cac gtt ttg gct gac gct ttc aaa cgc Asp Leu Glu Met Ile Asp Val His Val Leu Ala Asp Ala Phe Lys Arg 420 tat ctc ctg gac tta cca aat cct gtc att cca gca gcc gtt tac agt Tyr Leu Leu Asp Leu Pro Asn Pro Val Ile Pro Ala Ala Val Tyr Ser 445 | _ | | | 340 | | | | | 345 | | | | | 350 | | | |
| 355 | gaa | caa | caa | gct | ttg | act | ctc | ccg | gat | ctt | gca | gag | cag | ttt | gcc | cct | 1104 |
| cct gac att gcc cct ctt atc aag ctc gtg gaa gcc att gaa 1152 Pro Asp Ile Ala Pro Leu Leu Leu Leu Val Glu Ala Ile Ile Ala Ile Ile Ala Ile Ile Ile Ile Ala Ile | Glu | Gln | Gln | Ala | Leu | Thr | Leu | Pro | Asp | Leu | Ala | Glu | | | . Ala | Pro | |
| Pro Asp Ile Ala Pro Pro Ileu Leu Ile Lys Leu Val Glu Ala Ile Glu 370 Asp Ile Ala Pro Pro Ileu Leu Ile Lys Leu Val Glu Ala Ile Glu 380 Asp Ileu Glu 375 Asp Ileu Glu Cys Ser Thr Leu Tyr Arg Thr Gln Ser Ser Ser Ser 395 Asp Ileu Glu Cys Ser Thr Leu Tyr Arg Thr Gln Ser Ser Ser 400 Asp Ileu Ala Glu Leu Arg Gln Leu Leu Asp Cys Asp Thr Pro Ser Val 405 Asp Ileu Ala Glu Leu Arg Gln Leu Leu Asp Cys Asp Thr Pro Ser Val 415 Asp Ileu Glu Met Ile Asp Val His Val Leu Ala Asp Ala Phe Lys Arg 420 Asp Ileu Ala Asp Ala Phe Lys Arg 425 Asp Ileu Leu Asp Leu Pro Asn Pro Val Ile Pro Ala Ala Val Tyr Ser 435 Asp Ileu Ala Val Tyr Ser 445 | | | 355 | | | | • | | | | | | | | | | 1150 |
| 370 375 380 aag aaa ggt ctg gaa tgt tca act cta tac aga aca cag agc tcc agc 1200 Lys Lys Gly Leu Glu Cys Ser Thr Leu Tyr Arg Thr Gln Ser Ser Ser 385 390 395 400 aac ctg gca gaa tta cga cag ctt ctt gat tgt gat aca ccc tcc gtg 1248 Asn Leu Ala Glu Leu Arg Gln Leu Leu Asp Cys Asp Thr Pro Ser Val 405 410 415 gac ttg gaa atg atc gat gtg cac gtt ttg gct gac gct ttc aaa cgc 1296 Asp Leu Glu Met Ile Asp Val His Val Leu Ala Asp Ala Phe Lys Arg 420 425 430 tat ctc ctg gac tta cca aat cct gtc att cca gca gcc gtt tac agt Tyr Leu Leu Asp Leu Pro Asn Pro Val Ile Pro Ala Ala Val Tyr Ser 435 1344 | cct | gac | att | gcc | ccg | cct | ctt | ctt | ato | aag | cto | gtg | gaa | gcc | att | gaa | 1152 |
| aag aaa ggt ctg gaa tgt tca act cta tac aga aca cag agc tcc agc 1200 Lys Lys Gly Leu Glu Cys Ser Thr Leu Tyr Arg Thr Gln Ser Ser Ser 395 400 aac ctg gca gaa tta cga cag ctt ctt gat tgt gat aca ccc tcc gtg 1248 Asn Leu Ala Glu Leu Arg Gln Leu Leu Asp Cys Asp Thr Pro Ser Val 415 405 gac ttg gaa atg atc gat gtg cac gtt ttg gct gac gct ttc aaa cgc 1296 Asp Leu Glu Met Ile Asp Val His Val Leu Ala Asp Ala Phe Lys Arg 420 425 tat ctc ctg gac tta cca aat cct gtc att cca gca gcc gtt tac agt Tyr Leu Leu Asp Leu Pro Asn Pro Val Ile Pro Ala Ala Val Tyr Ser 435 1344 | Pro | | | e Ala | Pro | Pro | | | ılle | ь гуз | Leu | ι vaı | . GIU | 1 Ala | rrre | e Gru | |
| Lys Lys Gly Leu Glu Cys Ser Thr Leu Tyr Arg Thr Gln Ser Ser Ser 385 390 395 400 aac ctg gca gaa tta cga cag ctt ctt gat tgt gat aca ccc tcc gtg 1248 Asn Leu Ala Glu Leu Arg Gln Leu Leu Asp Cys Asp Thr Pro Ser Val 415 415 gac ttg gaa atg atc gat gtg cac gtt ttg gct gac gct ttc aaa cgc 1296 Asp Leu Glu Met Ile Asp Val His Val Leu Ala Asp Ala Phe Lys Arg 420 425 430 tat ctc ctg gac tta cca aat cct gtc att cca gca gcc gtt tac agt 1344 Tyr Leu Leu Asp Leu Pro Asn Pro Val Ile Pro Ala Ala Val Tyr Ser 435 440 445 | | 370 | 1 | | | | | | | | | | | | . + | | 1200 |
| 385 390 395 400 aac ctg gca gaa tta cga cag ctt ctt gat tgt gat aca ccc tcc gtg Asn Leu Ala Glu Leu Arg Gln Leu Leu Asp Cys Asp Thr Pro Ser Val 405 410 415 gac ttg gaa atg atc gat gtg cac gtt ttg gct gac gct ttc aaa cgc Asp Leu Glu Met Ile Asp Val His Val Leu Ala Asp Ala Phe Lys Arg 420 425 430 tat ctc ctg gac tta cca aat cct gtc att cca gca gcc gtt tac agt Tyr Leu Leu Asp Leu Pro Asn Pro Val Ile Pro Ala Ala Val Tyr Ser 435 440 445 | aag | aaa | . ggt | : ctg | gaa | tgt | . tca | act | . cta | tac | aga | aca mb | Cay | g ago | | c Ser | 1200 |
| ac ctg gca gaa tta cga cag ctt ctt gat tgt gat aca ccc tcc gtg Asn Leu Ala Glu Leu Arg Gln Leu Leu Asp Cys Asp Thr Pro Ser Val 405 gac ttg gaa atg atc gat gtg cac gtt ttg gct gac gct ttc aaa cgc Asp Leu Glu Met Ile Asp Val His Val Leu Ala Asp Ala Phe Lys Arg 420 425 tat ctc ctg gac tta cca aat cct gtc att cca gca gcc gtt tac agt Tyr Leu Leu Asp Leu Pro Asn Pro Val Ile Pro Ala Ala Val Tyr Ser 435 440 1248 | | _ | GT? | , Leu | ı GIU | | | Thi | r Let | LAT | | | . G11 | 1 361 | . 561 | 400 | |
| Asn Leu Ala Glu Leu Arg Gln Leu Leu Asp Cys Asp Thr Pro Ser Val 405 gac ttg gaa atg atc gat gtg cac gtt ttg gct gac gct ttc aaa cgc Asp Leu Glu Met Ile Asp Val His Val Leu Ala Asp Ala Phe Lys Arg 420 tat ctc ctg gac tta cca aat cct gtc att cca gca gcc gtt tac agt Tyr Leu Leu Asp Leu Pro Asn Pro Val Ile Pro Ala Ala Val Tyr Ser 435 440 415 1296 1296 1344 | 385 | | | | | | | | | . ~ - + | | | - 202 | | tco | | 1248 |
| gac ttg gaa atg atc gat gtg cac gtt ttg gct gac gct ttc aaa cgc 1296 Asp Leu Glu Met Ile Asp Val His Val Leu Ala Asp Ala Phe Lys Arg 420 425 430 tat ctc ctg gac tta cca aat cct gtc att cca gca gcc gtt tac agt Tyr Leu Leu Asp Leu Pro Asn Pro Val Ile Pro Ala Ala Val Tyr Ser 435 440 445 | aac | cto | gca | a gaa | tta | cga | cay | TO | LOU | . yat | Cve | . yar | Thi | r Pro | Sei | r Val | |
| gac ttg gaa atg atc gat gtg cac gtt ttg gct gac gct ttc aaa cgc 1296 Asp Leu Glu Met Ile Asp Val His Val Leu Ala Asp Ala Phe Lys Arg 420 425 430 tat ctc ctg gac tta cca aat cct gtc att cca gca gcc gtt tac agt 1344 Tyr Leu Leu Asp Leu Pro Asn Pro Val Ile Pro Ala Ala Val Tyr Ser 435 440 445 | ASI | і ьес | i Alc | i GIL | | | , GII | пес | и пес | | | , ,,,,, | | | 415 | 5 | |
| Asp Leu Glu Met Ile Asp Val His Val Leu Ala Asp Ala Phe Lys Arg 420 425 430 tat ctc ctg gac tta cca aat cct gtc att cca gca gcc gtt tac agt Tyr Leu Leu Asp Leu Pro Asn Pro Val Ile Pro Ala Ala Val Tyr Ser 435 440 445 | ~~ | · ++^ | | a + r | ילב ז | , r nat | - atr | r car | a att | | | gaα | c act | t tto | | | 1296 |
| tat ctc ctg gac tta cca aat cct gtc att cca gca gcc gtt tac agt 1344 Tyr Leu Leu Asp Leu Pro Asn Pro Val Ile Pro Ala Ala Val Tyr Ser 435 440 445 | yac | TO | yaa Gli | ı acç | - Tle | . gat | val | His | s Val | Lei | ı Ala | a Asr | Ala | a Phe | e Ly: | s Arg | |
| tat ctc ctg gac tta cca aat cct gtc att cca gca gcc gtt tac agt 1344 Tyr Leu Leu Asp Leu Pro Asn Pro Val Ile Pro Ala Ala Val Tyr Ser 435 440 445 | ASI | , nec | . 51 | | | 101 | | | | | | | | 430 |) - | | |
| Tyr Leu Leu Asp Leu Pro Asn Pro Val Ile Pro Ala Ala Vai Tyr Ser 435 440 445 | + = + | - ctr | . ctc | a gad | e tta | a cca | a aat | : cct | t ata | att | cca | a gca | a gc | c gti | t ta | c agt | 1344 |
| 435 440 445 | Tv: | r J.ei | ı Lei | . Ası | o Lei | ı Pro | Asr | n Pro | o Val | L Ile | e Pro | o Ālā | a Al | a Vai | l Ty | r Ser | |
| gaa atg att tct tta gct cca gaa gta caa agc tcc gaa gaa tat att 1392 | _ | | 43 | 5 | | | | 44 | 0 | | | | 44 | 5 | | | |
| | ga | a ato | g at | t tc | t tta | a gct | t cca | a ga | a gta | a caa | a ago | c to | c ga | a ga | a ta | t att | 1392 |

| Cang Cta ttg aag aag ctt att agg tog ct agc ata cct cat cag tat 1440 | Glu | | Ile | Ser | Leu | Ala | | Glu | Val | Gln | Ser | Ser 460 | Glu | Glu | Tyr | Ile | |
|---|------------|------------|------------|--------------|-----|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|---------|
| 465 | cag | 450 cta | ttg | aag | aag | ctt | 455 att | agg | tcg | cct | agc | ata | cct | cat | cag | tat | 1440 |
| Trp Leu Thr Leu Gln Tyr Leu Leu Lys His Phe Phe Lys Leu Ser Gln 495 acc tcc agc aaa aat ctg ttg aat gca aga gta ctc tct gaa att ttc 500 Thr Ser Ser Lys Asn Leu Leu Asn Ala Arg Val Leu Ser Glu 11e Phe 505 agc cct atg ctt tcc aga ttc tcc agc gcc agc tg sta at act gaa Ser Pro Met Leu Phe Arg Phe Ser Ala Ala Ser Ser Asp Asn Thr Glu 515 acc ct ata aaa gtt ata gaa att tta atc tca act gaa tgg at ga Ser Pro Met Leu Phe Arg Phe Ser Ala Ala Ser Ser Asp Asn Thr Glu 510 acc ct ata aaa gtt ata gaa att tta atc tca act gaa tgg at gaa Ser Ser Asp Asn Thr Glu 550 acc ag cct gca cca gca ctg cct cct aac cca cca aaa cct act act 550 cga cag cct gca cca gca ctg cct cct aac cca cca aaa cct act act 654 Asn Leu Ile Lys Val Ile Glu Ile Leu Ile Ser Thr Glu Trp Asn Glu 550 cga cag cct gca cca gca ctg cct cct aac cca cca aaa cct act act 654 Asn Ala Asn Asn Ser Gly Met Asn Asn Asn Met Ser Leu Gln Asn Ala Glu 550 fat gcc aac aac gfat at aat act at at gt cct tta caa aat gct gaa 1728 Val Ala Asn Asn Gly Met Asn Asn Asn Met Ser Leu Gln Asn Ala Glu 556 fat gct act tgg gga gat at ctc gag gaa gag gtg aat gaa aca ctt cqa 1776 Trp Tyr Trp Gly Asp Ile Ser Arg Glu Glu Val Asn Glu Lys Leu Arg 580 gat aca gca gac gga acc ttt tt gta cga gat gcg tct act aca aat ga 1824 Asp Thr Ala Asp Gly Thr Phe Leu Val Arg Asp Ala Ser Thr Lys Met 595 cat gdt gat tat act ctt aca cta agg aaa ggg gga aat aac aca at tt 1872 His Gly Asp Tyr Thr Leu Thr Leu Arg Lys Gly Gly Asn Asn Lys Leu 610 acc ttc agt tct dtg tt gaa tta aac acc tac cgg aat gac tta 1872 His Gly Asp Tyr Thr Leu Thr Leu Arg Lys Gly Gly Asn Asn Lys Leu 625 cac ttc agt tct dtg tt gaa tta aac acc acc acc acga acc acc acc acc a | 465 | | | _ | - | 470 | | | | | 475 | | | | | 480 | 1400 |
| Sec Coc ago aaa aat ctg ttg aat goa ago gta ctc ttg gaa att ttc ttc ftr ser Ser Lyx Ash Leu Leu Ash Ala Arg Val Leu Ser Glu Ile Phe Son Son | | | | | | | | | | | | | | | | | 1488 |
| The Ser Ser Lys Ash Leu Leu Ash Ala Arg Val Leu Ser Glu Ile Phe 500 ago cot atg cit tto aga tic to ga goc ago tot gat aat act gaa 1584 Ser Pro Met Leu Phe Arg Phe Ser Ala Ala Ser Ser Asp Ash Thr Glu 515 aac ctc ata aaa git ata gaa att ta act gaa ago goc ago tot gat aat act gaa 1632 Ash Leu Ile Lys Val Ile Glu Ile Leu Ile Ser Thr Glu Trp Ash Glu 530 530 540 540 535 550 560 760 760 760 760 760 760 760 760 760 7 | acc | tcc | agc | aaa | | cta | tta | aat | gca | | qta | ctc | tct | gaa | | ttc | 1536 |
| See Pro Met Leu Phe Arg Phe Ser Ala Ala Ser Ser Asp Ash Thr Glu Side Thr | Ser | Ser | Lys 500 | Asn | Leu | Leu | Asn | Ala 505 | Arg | Val | Leu | Ser | Glu 510 | Ile | Phe | |
| Asn Leu Ile Lys Val Ile Glu Ile Leu Ile Ser Thr Glu Trp Asn Glu 530 cga cag cct gca cca gca ctg cct cct aaa cca caa aac ct act act Arg Gln Pro Ala Pro Ala Leu Pro Pro Lys Pro Pro Lys Pro Thr Thr 545 550 gta gcc aac aac ggt atg aat aac aat atg tcc tta caa aat gct gaa Val Ala Asn Asn Gly Met Asn Asn Asn Met Ser Leu Gln Asn Ala Glu 565 tgg tac tgg gga gat atc tcg agg gaa gat gaa gtg aat gaa aac ctt cga Trp Tyr Trp Gly Asp Ile Ser Arg Glu Glu Val Asn Glu Lys Leu Arg 580 gat aca gca gac ggg act ttt ttg gta cga gat ggg gat act gaa aat gga aac gtg act act ga ggg gat gat gaa gad gad gat act cga agg gat gat gat gaa gad gat gad gat act cga agg gat gat gat gaa aac act cga Arg Glu Glu Val Asn Glu Lys Leu Arg 595 gat aca gca gac ggg act ttt ttg gta cga gat gcg tct act aaa atg 1824 Asp Thr Ala Asp Gly Thr Phe Leu Val Arg Asp Ala Ser Thr Lys Met 605 cat gtg gat tat act ctt aca cta agg aaa ggg gaa aat aac aaa tta 1872 His Gly Asp Tyr Thr Leu Thr Leu Arg Lys Gly Gly Asn Asn Lys Leu 605 act aaa at ttt cat cga gat ggg aaa tat ggc ttc tct gac cca tta 1920 act caaa at ttt cat cga gat ggg aaa tat ggc ttc tct gac cca tta 1920 act tca agt tct gtg gtt gaa tta aac acc cat cac gad at gaa act tca gat gat gac gac acc act tac gat gat gat aac acc acc tac cgg aat gat ctc gat gat gac gat gat gat acc acc acc acc acc acc acc acc acc a | | | Met | | | | | Ser | | | | | Asp | | | | 1584 |
| 530 | | | | | | | | | | | | | | | | | 1632 |
| Arg Gln Pro Ala Leu Pro Lys Pro Lys Pro Lys Pro Tro Lys Pro Tro Lys Pro Tro Tro Spo 560 560 1728 Val Ala Asa Asa Gly Met Asa Asa Asa Met Sec Leu Gla Asa Ala Glu Glu Asa Ct Ct Cas Glo Glo Asa Glo Asa Glo Asa Asa Asa Asa Asa Asa Asa Asa Ct Ct Cas Cas asa asa ata ct ct asa Asa ata ct ct asa ata ct ct asa ata ct ct cas ct ct cas c | | 530 | | _ | | | 535 | | | | | 540 | | | | | 1680 |
| gta gcc aac agc gt atg aat aac aat atg tcc tta caa aat gct gaa 1728 Val Ala Asn Asn Gly Met Asn Asn Met Ser Leu Gln Asn Ala Glu Glu Asn Asn Asn Ala Glu Glu Asn Lu Asn Asn Asn | Arg | | | | | Ala | | | | | Pro | | | | | Thr | |
| Total | gta | gcc | aac | aac | ggt | atg | aat | aac | aat | atg | tcc | tta | caa | aat | gct | gaa | 1728 |
| Trp Tyr Tyr Gly Asp Ile Ser Arg Glu Glu Val Asn Glu Lys Leu Arg 580 | Val | Āla | Asn | Asn | | Met | Asn | Asn | Asn | | Ser | Leu | Gln | Asn | | Glu | |
| gat aca gca gac ggg acc ttt ttg gta cga ggt gcg tct act aaa atg 1824 Asp Thr Ala Asp Gly Thr Phe Leu Val Arg Asp Ala Ser Thr Lys Met 595 cat ggt gat tat act ctt aca cta agg aaa ggg gga aat acc aaa tta 1872 His Gly Asp Tyr Thr Leu Thr Leu Arg Lys Gly Gly Asn Asn Lys Leu 610 atc aaa at ttt cat cga gat ggg aaa tat ggc ttc tct gac cca tta 1920 Atc aaa at ttt cat cga gat ggg aaa tat ggc ttc tct gac cca tta 1920 Atc aaa at ttt cat cga gat ggg aaa tat ggc ttc tct gac cca tta 1920 Atc aaa at ttt cat cga gat ggg aaa tat ggc ttc tct gac cca tta 1920 Atc aaa at ttt cat cga gat ggg aaa tat ggc ttc tct gac cca tta 1920 Atc aaa at ttt cat cga gat ggg aaa tat ggc ttc tct gac cca tta 1920 Atc agt tct gtg gtt gaa tta ata aac cac tac cgg aat gad gad gac | | | | | | | | | | | | | | | | | 1776 |
| Asp Thr Ala Asp Gly Thr Phe Leu Val Arg Asp Ala Ser Thr Lys Met 595 | _ | _ | _ | 580 | _ | | | | 585 | | | | | 590 | | | 1004 |
| His Gly Asp Tyr Thr Leu Thr Leu Arg Lys Gly Gly Asn Asn Lys Leu 610 atc aaa ata ttt cat cga gat ggg aaa tat ggc ttc tct gac cca tta 1920 11e Lys Ile Phe His Arg Asp Gly Lys Tyr Gly Phe Ser Asp Pro Leu 630 acc ttc agt tct gtg gtt gaa tta ata acc cac tac cgg aat gaa tct 1968 Thr Phe Ser Ser Val Val Glu Leu Ile Asn His Tyr Arg Asn Glu Ser 645 cta gct cag tat aat ccc aaa ttg gat gtg aaa tta ctt tat cca gta 2016 Leu Ala Gln Tyr Asn Pro Lys Leu Asp Val Lys Leu Leu Tyr Pro Val 6660 ctc aaa tac caa cag gat caa gtt gtc aaa gaa gat aat att gaa gct 2064 Ser Lys Tyr Gln Gln Asp Gln Val Val Lys Glu Asp Asn Ile Glu Ala 670 gta ggg aaa aaa tta cat gaa tat aac acc cag gat tat aac acc cag gaa aaa agt 2112 Val Gly Lys Lys Leu His Glu Tyr Asn Thr Gln Phe Gln Glu Lys Ser 690 cga gaa tat gat aga tta tat gaa gaa tat acc cgc aca tcc cag gaa 2160 Arg Glu Tyr Asp Arg Leu Tyr Glu Glu Tyr Thr Arg Thr Ser Gln Glu 700 atc caa atg aaa agg aca gct att gaa gca ttt aat gaa acc ata aaa 11e Gln Met Lys Arg Thr Ala Ile Glu Ala Phe Asn Glu Thr Ile Lys 725 ata ttt gaa gaa cag tgc cag acc caa gag cag tac aga aac acc aac alc aga aac gaa tat tat gaa gaa ttt arg aac aga gaa acc ata aaa 11e Glu Glu Glu Cys Gln Thr Gln Gln Glu Glu Tyr 740 ata gaa aag ttt aac cgt gaa gac acc caa gag gad aac acc aac acc agg aacc acc acc agg acc acc | gat Asp | aca Thr | Ala | gac Asp | Gly | acc Thr | Phe | Leu | gta Val | cga Arg | Asp | gcg Ala | Ser | Thr | Lys | Met | 1824 |
| 610 615 620 atc aaa at at tt cat cat ag gat ggg aaa tat ggc ttc tc tct gac cca tta legs ly ly ly ly ly ly leg ly | cat | ggt | gat | tat | act | ctt | aca | cta | agg | aaa | ggg | gga | aat | aac | aaa | tta Leu | 1872 |
| The Lys | | 610 | _ | - | | | 615 | | | | | 620 | | | | | 1000 |
| acc ttc agt tct gtg gtt gaa tta ata aac cac tac cgg aat gaa tct 1968 Thr Phe Ser Ser Val Val Glu Leu Ile Asn His Tyr Arg Asn Glu Ser 645 6650 cta gct cag tat aat ccc aaa ttg gat gtg aaa tta ctt tat cca gta Leu Asn Glu Tyr Asn Pro Lys Leu Asp Val Lys Leu Leu Tyr Pro Val 660 2016 tcc aaa tac caa cag gat caa ggt gtg Glu Asp Gln Gln Asp Gln Val Val Lys Glu Asp Gln Glu Ala 675 2064 gta ggg aaa aaa tta cat cat gaa ata ta gaa gaa tat at gaa ggg gaa aac aac agg gaa tat gaa gaa tat gaa gaa tat gaa gaa | Ile | | | | | Arg | | | | | Gly | | | | | Leu | 1920 |
| cta gct cag tat aat ccc aaa ttg gat gta g | acc | | | | | | | | | | | | | | | | 1968 |
| Leu Ala Gln Tyr Asn Pro Lys Leu Asp Val Lys Leu Leu Tyr Pro Val tcc aaa tac caa caa gat caa gtt gtc aaa gaa gat aat att gaa gct 2064 Ser Lys Tyr Tyr Gln Gln Asp Gln Val Lys Glu Asp Asn Ile Glu Ala gta ggg aaa aaa ata tat cat gaa tat aac cat cat gaa tat caa act cag tat caa cat cac cag gaa tat caa gaa tat cac gaa tat acc cag gaa tat cac gaa tat cac | | | | | 645 | | | | | 650 | | | | | 655 | | |
| tcc aaa tac caa cag gat caa gtt gtc aaa gaa gat aat att gaa gct 2064 Ser Lys Tyr Gln Gln Asp Gln Val Val Lys Glu Asp Asn Ile Glu Ala 675 gta ggg aaa aaa tta cat gaa tat aac act cag ttt caa gaa aaa agt 2112 Val Gly Lys Lys Leu His Glu Tyr Asn Thr Gln Phe Gln Glu Lys Ser 690 cga gaa tat gat aga tta tat gaa gaa tat acc cgc aca tcc cag gaa 2160 Arg Glu Tyr Asp Arg Leu Tyr Glu Glu Tyr Thr Arg Thr Ser Gln Glu 705 atc caa atg aaa agg aca gct att gaa gca ttt aat gaa acc ata aaa 2208 Ile Gln Met Lys Arg Thr Ala Ile Glu Ala Phe Asn Glu Thr Ile Lys 725 ata ttt gaa gaa cag tgc cag acc caa gag cgg tac agc aaa gaa tac 2256 Ile Phe Glu Glu Gln Cys Gln Thr Gln Glu Arg Tyr Ser Lys Glu Tyr 740 ata gaa aag ttt aaa cgt gaa ggc aat gag aaa gaa ata caa agg att 2304 Ile Glu Lys Phe Lys Arg Glu Gly Asn Glu Lys Glu Ile Gln Arg Ile 755 atg cat aat tat gat aag ttg aag tct cga atc agt gaa att att gac 2352 Met His Asn Tyr Asp Lys Leu Lys Ser Arg Ile Ser Glu Ile Ile Asp 770 | | | | | | | | | | | | | | | | | 2016 |
| Ser Lys Tyr Gln Gln Asp Gln Val Val Lys Glu Asp Asp Asp Glu Ala gta ggg aaa aaa tta cat gaa tat aac act cag ttt caa gaa aaa agt 2112 Val Gly Lys Lys Leu His Glu Tyr Asn Thr Gln Phe Gln Glu Lys Ser 690 690 695 700 700 700 700 700 700 700 700 700 700 700 700 700 700 700 700 700 720 710 710 710 715 715 720 720 720 720 720 720 720 720 720 720 735 735 735 735 735 735 735 735 735 | | | | 660 | | | | | 665 | | | | | 670 | | | 2064 |
| gta ggg aaa aaa tta cat gaa tat aac act cag ttt caa gaa aaa agg 2112 Val Gly Lys Lys Leu His Glu Tyr Asn Thr Gln Phe Gln Glu Lys Ser 690 695 695 695 700 696 697 696 696 697 696 | | | | | | | | | | | | | | | | | 2064 |
| Val Gly Lys Lys Leu His Glu Tyr Asn Thr Gln Phe Gln Glu Lys Ser cga gaa tat gaa gaa tat acc cgc aca tcc cag gaa 2160 Arg Glu Tyr Asp Arg Leu Tyr Glu Glu Tyr Thr Arg Thr Ser Glu Glu Glu Glu Thr Ser Glu Glu Glu Thr Arg Thr Arg Thr Ala Ile Glu Ala Phe Asn Glu Thr Ile Lys Glu Thr Ile Arg Tyr Tyr Tyr Ser Lys Glu Tyr | | _ | 675 | | | | | 680 | | | | | 685 | | | | 2112 |
| cga gaa tat gat aga tat gat aga tat gaa gaa | yal Val | Gly | Lys | Lys | Leu | His | Glu | Tyr | Asn | Thr | Gln | Phe | Gln | Glu | Lys | Ser | 2112 |
| 705 atc caa atg aaa agg aca gct att gaa gca ttt aat gaa acc ata aaa 11e Gln Met Lys Arg Thr Ala Ile Glu Ala Phe Asn Glu Thr Ile Lys 725 ata ttt gaa gaa cag tgc cag acc caa gag cgg tac agc aaa gaa tac 11e Phe Glu Glu Gln Cys Gln Thr Gln Glu Arg Tyr Ser Lys Glu Tyr 740 ata gaa aag ttt aaa cgt gaa ggc aat gag aaa gaa ata caa agg att 11e Glu Lys Phe Lys Arg Glu Gly Asn Glu Lys Glu Ile Gln Arg Ile 755 atg cat aat tat gat aag ttg aag tct cga atc agt gaa att att gac Met His Asn Tyr Asp Lys Leu Lys Ser Arg Ile Ser Glu Ile Ile Asp 770 720 720 721 722 723 724 725 736 735 735 735 735 735 735 735 735 735 735 | cga | gaa | tat | gat | aga | tta | tat | gaa | gaa | tat | acc | cgc | aca | tcc | cag | gaa | 2160 |
| The Gln Met Lys Arg Thr Ala Ile Glu Ala Phe Asn Glu Thr Ile Lys 725 730 735 | 705 | | | | | 710 | | | | | 715 | | | | | 720 | 0000 |
| 725 730 735 ata ttt gaa gaa cag tgc cag acc caa gag cgg tac agc aaa gaa tac 2256 Ile Phe Glu Glu Gln Cys Gln Thr Gln Glu Arg Tyr Ser Lys Glu Tyr 740 745 750 ata gaa aag ttt aaa cgt gaa ggc aat gag aaa gaa ata caa agg att Ile Glu Lys Phe Lys Arg Glu Gly Asn Glu Lys Glu Ile Gln Arg Ile 755 760 765 atg cat aat tat gat aag ttg aag tct cga atc agt gaa att att gac Met His Asn Tyr Asp Lys Leu Lys Ser Arg Ile Ser Glu Ile Ile Asp 770 775 780 | atc | caa | atg | aaa | agg | aca Thr | gct | att | gaa | gca Ala | ttt Phe | aat | gaa | acc Thr | ata Tle | aaa Lvs | 2208 |
| The Phe Glu Glu Glu Cys Gln Thr Gln Glu Arg Tyr Ser Lys Glu Tyr | | | | | 725 | | | | | 730 | | | | | 735 | | 0056 |
| Ile Glu Lys Phe Lys Arg Glu Gly Asn Glu Lys Glu Ile Gln Arg Ile 755 760 765 atg cat aat tat gat aag ttg aag tct cga atc agt gaa att att gac Met His Asn Tyr Asp Lys Leu Lys Ser Arg Ile Ser Glu Ile Ile Asp 770 775 780 | ata Ile | ttt Phe | gaa Glu | Glu | Gln | tgc Cys | cag Gln | acc Thr | Gln | Glu | cgg Arg | tac Tyr | agc Ser | Lys | gaa Glu | tac Tyr | |
| 755 760 765 atg cat aat tat gat aag ttg aag tct cga atc agt gaa att att gac 2352 Met His Asn Tyr Asp Lys Leu Lys Ser Arg Ile Ser Glu Ile Ile Asp 770 775 780 | ata | gaa | aag | ttt | aaa | cgt | gaa | ggc | aat | gag | aaa | gaa | ata | caa | agg | att Tle | 2304 |
| Met His Asn Tyr Asp Lys Leu Lys Ser Arg Ile Ser Glu Ile Ile Asp 770 775 780 | | | 755 | 1 | | | | 760 | | | | | 765 | | | | 2352 |
| | Met | His | Asn | . cac Tyr | Asp | Lys | Leu | Lys | Ser | Arg | Ile | Ser | Glu | Ile | Ile | Asp | 2,7,2,6 |
| | agt | | | aga | ttg | gaa | | | : ttg | aag | aag | | | gct | gag | tat | 2400 |

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Ser Arg Arg Leu Glu Glu Asp Leu Lys Lys Gln Ala Ala Glu Tyr
                   790 795 800
                                                                   2448
cga gaa att gac aaa cgt atg aac agc att aaa cca gac ctt atc cag
Arg Glu Ile Asp Lys Arg Met Asn Ser Ile Lys Pro Asp Leu Ile Gln
               805
                                   810
ctg aga aag acg aga gac caa tac ttg atg tgg ttg act caa aaa ggt
                                                                   2496
Leu Arg Lys Thr Arg Asp Gln Tyr Leu Met Trp Leu Thr Gln Lys Gly
                               825
                                                                   2544
gtt cgg caa aag aag ttg aac gag tgg ttg ggc aat gaa aac act gaa
Val Arg Gln Lys Lys Leu Asn Glu Trp Leu Gly Asn Glu Asn Thr Glu
                           840
                                              845
gac caa tat tca ctg gtg gaa gat gat gaa gat ttg ccc cat cat gat
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Asp Gln Tyr Ser Leu Val Glu Asp Asp Glu Asp Leu Pro His His Asp
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gag aag aca tgg aat gtt gga agc agc aac cga aac aaa gct gaa aac
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Glu Lys Thr Trp Asn Val Gly Ser Ser Asn Arg Asn Lys Ala Glu Asn
                  870
                                      875
ctg ttg cga ggg aag cga gat ggc act ttt ctt gtc cgg gag agc agt
                                                                   2688
Leu Leu Arg Gly Lys Arg Asp Gly Thr Phe Leu Val Arg Glu Ser Ser
                                   890
aaa cag ggc tgc tat gcc tgc tct gta gtg gtg gac ggc gaa gta aag
                                                                   2736
Lys Gln Gly Cys Tyr Ala Cys Ser Val Val Val Asp Gly Glu Val Lys
           900
                               905
                                                                   2784
cat tgt gtc ata aac aaa aca gca act ggc tat ggc ttt gcc gag ccc
His Cys Val Ile Asn Lys Thr Ala Thr Gly Tyr Gly Phe Ala Glu Pro
                           920
tat aac ttg tac agc tct ctg aaa gaa ctg gtg cta cat tac caa cac
                                                                   2832
Tyr Asn Leu Tyr Ser Ser Leu Lys Glu Leu Val Leu His Tyr Gln His
acc tcc ctt gtg cag cac aac gac tcc ctc aat gtc aca cta gcc tac
                                                                   2880
Thr Ser Leu Val Gln His Asn Asp Ser Leu Asn Val Thr Leu Ala Tyr
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                                      955
                                                                   2907
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<213> Artificial Sequence

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<223> EGFP-p85alpha fusion

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Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
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          100
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
                          120
                                            125
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
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Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
                 150
                                    155
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
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              165
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
          180
                             185
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
                         200
                                            205
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
           215
                                       220
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
        230
                             235
Gly Leu Arg Ser Met Ser Ala Glu Gly Tyr Gln Tyr Arg Ala Leu Tyr
                                250
       245
Asp Tyr Lys Lys Glu Arg Glu Glu Asp Ile Asp Leu His Leu Gly Asp
                             265
Ile Leu Thr Val Asn Lys Gly Ser Leu Val Ala Leu Gly Phe Ser Asp
                          280
                                           285
Gly Gln Glu Ala Arg Pro Glu Glu Ile Gly Trp Leu Asn Gly Tyr Asn
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Glu Thr Thr Gly Glu Arg Gly Asp Phe Pro Gly Thr Tyr Val Glu Tyr
                  310
                                    315
Ile Gly Arg Lys Lys Ile Ser Pro Pro Thr Pro Lys Pro Arg Pro Pro
              325
                                330
Arg Pro Leu Pro Val Ala Pro Gly Ser Ser Lys Thr Glu Ala Asp Val
                             345
Glu Gln Gln Ala Leu Thr Leu Pro Asp Leu Ala Glu Gln Phe Ala Pro
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       355
Pro Asp Ile Ala Pro Pro Leu Leu Ile Lys Leu Val Glu Ala Ile Glu
          375
Lys Lys Gly Leu Glu Cys Ser Thr Leu Tyr Arg Thr Gln Ser Ser
       390 395
Asn Leu Ala Glu Leu Arg Gln Leu Leu Asp Cys Asp Thr Pro Ser Val
                                 410
Asp Leu Glu Met Ile Asp Val His Val Leu Ala Asp Ala Phe Lys Arg
           420
                             425
Tyr Leu Leu Asp Leu Pro Asn Pro Val Ile Pro Ala Ala Val Tyr Ser
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Glu Met Ile Ser Leu Ala Pro Glu Val Gln Ser Ser Glu Glu Tyr Ile
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                                        460
Gln Leu Leu Lys Lys Leu Ile Arg Ser Pro Ser Ile Pro His Gln Tyr
                  470
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Trp Leu Thr Leu Gln Tyr Leu Leu Lys His Phe Phe Lys Leu Ser Gln
               485
                                 490
Thr Ser Ser Lys Asn Leu Leu Asn Ala Arg Val Leu Ser Glu Ile Phe
                             505
         500
Ser Pro Met Leu Phe Arg Phe Ser Ala Ala Ser Ser Asp Asn Thr Glu
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                                            525
Asn Leu Ile Lys Val Ile Glu Ile Leu Ile Ser Thr Glu Trp Asn Glu
   530 535
                                        540
Arg Gln Pro Ala Pro Ala Leu Pro Pro Lys Pro Pro Lys Pro Thr Thr
                                     555
                  550
Val Ala Asn Asn Gly Met Asn Asn Asn Met Ser Leu Gln Asn Ala Glu
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               565
Trp Tyr Trp Gly Asp Ile Ser Arg Glu Glu Val Asn Glu Lys Leu Arg
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Asp Thr Ala Asp Gly Thr Phe Leu Val Arg Asp Ala Ser Thr Lys Met
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His Gly Asp Tyr Thr Leu Thr Leu Arg Lys Gly Gly Asn Asn Lys Leu
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Ile Lys Ile Phe His Arg Asp Gly Lys Tyr Gly Phe Ser Asp Pro Leu
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                  630
Thr Phe Ser Ser Val Val Glu Leu Ile Asn His Tyr Arg Asn Glu Ser
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              645
Leu Ala Gln Tyr Asn Pro Lys Leu Asp Val Lys Leu Leu Tyr Pro Val
                             665
           660
Ser Lys Tyr Gln Gln Asp Gln Val Val Lys Glu Asp Asn Ile Glu Ala
                                           685
       675
                          680
Val Gly Lys Lys Leu His Glu Tyr Asn Thr Gln Phe Gln Glu Lys Ser
                     695
Arg Glu Tyr Asp Arg Leu Tyr Glu Glu Tyr Thr Arg Thr Ser Gln Glu
                                   715
                  710
Ile Gln Met Lys Arg Thr Ala Ile Glu Ala Phe Asn Glu Thr Ile Lys
                       730 735
              725
Ile Phe Glu Glu Gln Cys Gln Thr Gln Glu Arg Tyr Ser Lys Glu Tyr
                                   750
                          745
Ile Glu Lys Phe Lys Arg Glu Gly Asn Glu Lys Glu Ile Gln Arg Ile
                760 . 765
Met His Asn Tyr Asp Lys Leu Lys Ser Arg Ile Ser Glu Ile Ile Asp
                     775
Ser Arg Arg Leu Glu Glu Asp Leu Lys Lys Gln Ala Ala Glu Tyr
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                                    795
Arg Glu Ile Asp Lys Arg Met Asn Ser Ile Lys Pro Asp Leu Ile Gln
                                 810
              805
Leu Arg Lys Thr Arg Asp Gln Tyr Leu Met Trp Leu Thr Gln Lys Gly
                             825
Val Arg Gln Lys Lys Leu Asn Glu Trp Leu Gly Asn Glu Asn Thr Glu
                         840
Asp Gln Tyr Ser Leu Val Glu Asp Asp Glu Asp Leu Pro His His Asp
                                        860
                      855
Glu Lys Thr Trp Asn Val Gly Ser Ser Asn Arg Asn Lys Ala Glu Asn
                                    875
                  870
Leu Leu Arg Gly Lys Arg Asp Gly Thr Phe Leu Val Arg Glu Ser Ser
                                 890
              885
Lys Gln Gly Cys Tyr Ala Cys Ser Val Val Val Asp Gly Glu Val Lys
                             905
                                                910
           900
His Cys Val Ile Asn Lys Thr Ala Thr Gly Tyr Gly Phe Ala Glu Pro
                                             925
                         920
Tyr Asn Leu Tyr Ser Ser Leu Lys Glu Leu Val Leu His Tyr Gln His
                                        940
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Thr Ser Leu Val Gln His Asn Asp Ser Leu Asn Val Thr Leu Ala Tyr
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<212> DNA

<213> Artificial Sequence

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qtc qaq ctq qac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc
                                                                      . 96
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
                                25
                                                                     144
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
                            40
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc
                                                                     192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
                        55
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag
                                                                     240
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
caq cac qac ttc ttc aaq tcc qcc atg ccc gaa ggc tac gtc cag gag
                                                                      288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                                    90
                85
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag
                                                                      336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
                                105
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc
                                                                      384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
                            120
                                                125
        115
atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac
                                                                      432
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
                       135
                                            140
aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac
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Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
                                       155
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ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc
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Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
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                                                        175
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qtq caq ctc qcc qac cac tac cag cag aac acc ccc atc ggc gac ggc
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
                                185
ccc gtg ctg ctc gac aac cac tac ctg agc acc cag tcc gcc ctg
                                                                      624
Pro Val Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
        195
                            200
                                                205
age aaa gae eec aac gag aag ege gat eac atg gte etg etg gag tte
                                                                      672
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
                                            220
                        215
                                                                      720
gtg acc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
                                        235
                    230
                                                                      768
gga ctc aga tct cga gct caa gct tcg aat tcg acc atg tcg tcc atc
Gly Leu Arg Ser Arg Ala Gln Ala Ser Asn Ser Thr Met Ser Ser Ile
                245
                                    250
ttg cca ttc acg ccg cca gtt gtg aag aga ctg ctg gga tgg aag aag
                                                                      816
Leu Pro Phe Thr Pro Pro Val Val Lys Arg Leu Leu Gly Trp Lys Lys
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                                265
tca qct qqt qqq tct qqa qga qca qgc qga gga gag cag aat ggg cag
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<223> EGFP-Smad2 fusion

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|-------------------|-------------------|--------------------------|--------------------------|-------------------|------------|-------------------|-------------------|-------------------|------------|------------|------------|-------------------|-------------------|------------|------------|--------------|
| | | | | | | aaa Lys 295 | | | | | | | | | | 912 |
| aan | | aca | aas | cas | tta | gat | aaa | ctt | aaa | 222 | | ato | 200 | act | C 2 2 | 960 |
| Tree | Tria | mbx | Cli | 7×~ | Ton | 700 | Clu | Ton | Clu | T | 71- | 71- | mb- | mb- | Caa | 960 |
| | гуѕ | THE | GTÀ | Arg | | Asp | GIU | ьeu | GIU | | Ата | тте | Thr | Thr | | |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 | |
| aac | tgt | aat | act | aaa | tgt | gtt | acc | ata | cca | agc | act | tgc | tct | gaa | att | 1008 |
| | | | | 325 | _ | Val | | | 330 | | | _ | | 335 | | |
| tgg | gga | ctg | agt | aca | cca | aat | acg | ata | gat | cag | tgg | gat | aca | aca | ggc | 1056 |
| Trp | Gly | Leu | Ser | Thr | Pro | Asn | Thr | Ile 345 | Asp | Gln | Trp | Asp | Thr 350 | Thr | Gly | |
| ctt | tac | age | | tet | gaa | caa | 200 | | tet | ctt | ast. | aat | | ctc | cac | 1104 |
| | | - | | | _ | | | | | | _ | | _ | | _ | 1104 |
| пеп | TAT | | FIIE | Ser | Giu | Gln | | AIG | ser | ьец | ASP | _ | Arg | ьeu | GIII | |
| | | 355 | | | | | 360 | | | | | 365 | | | | |
| _ | | | _ | | | ttg | | | - | | | _ | _ | | | 1152 |
| Val | Ser | His | Arg | Lys | Gly | Leu | Pro | His | Val | Ile | Tyr | Cys | Arg | Leu | Trp | |
| | 370 | | | | | 375 | | | | | 380 | | | | | |
| cac | taa | cct | gat | ctt | cac | agt | cat | cat | gaa | ctc | aaσ | gca | att | gaa | aac | 1200 |
| | | | | | | Ser | | | | | | | | | | 1200 |
| 385 | 110 | | шр | LCu | 390 | DCI | 1110 | 1115 | OLU | 395 | БуБ | AΙα | 110 | Olu | | |
| | | | | | | | | | | | | | | | 400 | 1010 |
| | | | | | | ctt | | | | | | | | | | 1248 |
| Cys | Glu | Tyr | Ala | | Asn | Leu | Lys | Lys | | Glu | Val | Cys | Val | Asn | Pro | |
| | | | | 405 | | | | | 410 | | | | | 415 | | |
| tac | cac | tat | cag | aga | gtt | gag | aca | cca | gtt | ttg | cct | cca | gta | tta | gtg | 1296 |
| Tyr | His | Tyr | Gln | Arq | Val | Glu | Thr | Pro | Val | Leu | Pro | Pro | Val | Leu | Val | |
| - | | - | 420 | | | | | 425 | | | | | 430 | | | |
| CCC | cas | Cac | | aaa | ato | cta | 202 | | a++ | 000 | cat | ata | | ~~~ | + - + | 1344 |
| | | | | | | | | | | | | | | | | 1344 |
| Pro | Arg | | Thr | GIU | тте | Leu | | GIU | ьeu | Pro | Pro | | Asp | Asp | Tyr | |
| | | 435 | | | | | 440 | | | | | 445 | | | | |
| act | cac | tcc | att | cca | gaa | aac | act | aac | ttc | cca | gca | gga | att | gag | cca | 1392 |
| Thr | His | Ser | Ile | Pro | Glu | Asn | Thr | Asn | Phe | Pro | Ala | Gly | Ile | Glu | Pro | |
| | 450 | | | | | 455 | | | | | 460 | | | | | |
| cag | agt. | aat | tat | att | cca | gaa | acq | cca | cct | cct | ααa | tat | atc | aαt | gaa | 1440 |
| _ | _ | | | | | Glu | _ | | | | | | | _ | _ | |
| 465 | 001 | 11011 | - 1 - | | 470 | 0 | **** | 110 | | 475 | CLY | - y - | 110 | DCI | 480 | |
| | | | | | | | | | | | | | | | | 1 400 |
| | | | | - | _ | caa | _ | _ | | | _ | _ | - | | | 1488 |
| Asp | GIA | Glu | Thr | | Asp | Gln | GIn | Leu | | GIn | Ser | Met | Asp | | Gly | |
| | | | | 485 | | | | | 490 | | | | | 495 | | |
| | | | | | | cct | | | | | | | | | | 1536 |
| Ser | Pro | Ala | Glu | Leu | Ser | Pro | Thr | Thr | Leu | Ser | Pro | Val | Asn | His | Ser | |
| | | | 500 | | | | | 505 | | | | | 510 | | | |
| tta | gat | tta | caq | cca | att | act | tac | t.ca | αаа | cct | gca | ttt | taa | tat | tica | 1584 |
| | | | | | | Thr | | | | | | | | | | 1001 |
| пси | пор | 515 | OIII | 110 | Vai | 1111 | 520 | Ser | Giu | LIO | лта | | тър | Cys | Ser | |
| | | | | | 1. 4 | | | | | | | 525 | | | | 4 600 |
| | | | | | | aat | | | | | | | | | | 1632 |
| TTe | | Tyr | Tyr | Glu | Leu | Asn | GIn | Arg | Val | Gly | Glu | Thr | Phe | His | Ala | |
| | 530 | | | | | 535 | | | | | 540 | | | | | |
| tca | cag | CCC | tca | ctc | act | gta | gat | qqc | ttt | aca | gac | cca | tca | aat | tca | 1680 |
| Ser | Gln | Pro | Ser | Leu | Thr | Val | Āsp | Glv | Phe | Thr | Asp | Pro | Ser | Asn | Ser | |
| 545 | | | | | 550 | | | | | 555 | L | | | | 560 | |
| | 200 | ++0 | + 00 | ++> | | tta | ctc | tac | a a t | | 220 | 003 | 22+ | ~~~ | | 1728 |
| | | | | | | | | | | | | | | | | 1720 |
| GIU | ALG | Pile | Cys | | GTA | Leu | ьeu | ser | | val | ASI | Arg | ASI | | Thr | |
| | | | | 565 | | | | | 570 | | | | | 575 | | |
| | | 2+4 | aca | aga | agg | cat | ata | gga | aga | gga | gtg | cgc | tta | tac | tac | 1776 |
| gta | gaa | aly | | _ | | | | 03 | 7 ~~~ | C7 | | 70 | _ | | | |
| - | _ | _ | | _ | Arg | His | Ile | GTA | ALG | GTA | vaı | Arg | Leu | Tyr | Tyr | |
| - | _ | _ | | _ | Arg | His | Ile | 585 | AIG | GIA | val | Arg | Leu 590 | Tyr | Tyr | |
| Val | Glu | Met | Thr 580 | Arg | | | | 585 | | | | | 590 | | _ | 1824 |
| Val ata | Glu ggt | Met ggg | Thr 580 gaa | Arg gtt | ttt | gct | gag | 585 tgc | cta | agt | gat | agt | 590 gca | atc | ttt | 1824 |
| Val ata | Glu ggt | Met ggg Gly | Thr 580 gaa | Arg gtt | ttt | | gag Glu | 585 tgc | cta | agt | gat | agt Ser | 590 gca | atc | ttt | 1824 |
| Val ata Ile | Glu ggt Gly | Met ggg Gly 595 | Thr 580 gaa Glu | Arg gtt Val | ttt Phe | gct | gag Glu 600 | 585 tgc Cys | cta Leu | agt Ser | gat Asp | agt Ser 605 | 590 gca Ala | atc Ile | ttt Phe | 1824 1872 |

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Val Gln Ser Pro Asn Cys Asn Gln Arg Tyr Gly Trp His Pro Ala Thr
                        615
                                           620
 gtg tgt aaa att cca cca ggc tgt aat ctg aag atc ttc aac aac cag
                                                                     1920
 Val Cys Lys Ile Pro Pro Gly Cys Asn Leu Lys Ile Phe Asn Asn Gln
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                                         635
gaa ttt gct gct ctt ctg gct cag tct gtt aat cag ggt ttt gaa gcc
                                                                     1968
Glu Phe Ala Ala Leu Leu Ala Gln Ser Val Asn Gln Gly Phe Glu Ala
                                     650
gtc tat cag cta act aga atg tgc acc ata aga atg agt ttt gtg aaa
                                                                     2016
Val Tyr Gln Leu Thr Arg Met Cys Thr Ile Arg Met Ser Phe Val Lys
            660
                                665
ggg tgg gga gca gaa tac cga agg cag acg gta aca agt act cct tgc
                                                                     2064
Gly Trp Gly Ala Glu Tyr Arg Arg Gln Thr Val Thr Ser Thr Pro Cys
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                            680
tgg att gaa ctt cat ctg aat gga cct cta cag tgg ttg gac aaa gta
                                                                     2112
Trp Ile Glu Leu His Leu Asn Gly Pro Leu Gln Trp Leu Asp Lys Val
                       695
                                            700
tta act cag atg gga tcc cct tca gtg cgt tgc tca agc atg tca taa
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Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
                            40
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
                   70
                                        75
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85
                                    90
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
           100
                                105
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
                           120
                                                125
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
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                                           140
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
                   150
                                        155
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                                    170
                                                       175
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
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Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu

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 Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
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                                   220
 Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
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                                       235
 Gly Leu Arg Ser Arg Ala Gln Ala Ser Asn Ser Thr Met Ser Ser Ile
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                                    250
 Leu Pro Phe Thr Pro Pro Val Val Lys Arg Leu Leu Gly Trp Lys Lys
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 Ser Ala Gly Gly Ser Gly Gly Ala Gly Gly Glu Gln Asn Gly Gln
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Glu Glu Lys Trp Cys Glu Lys Ala Val Lys Ser Leu Val Lys Lys Leu
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Lys Lys Thr Gly Arg Leu Asp Glu Leu Glu Lys Ala Ile Thr Thr Gln
                    310
                                       315
Asn Cys Asn Thr Lys Cys Val Thr Ile Pro Ser Thr Cys Ser Glu Ile
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Trp Gly Leu Ser Thr Pro Asn Thr Ile Asp Gln Trp Asp Thr Thr Gly
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Leu Tyr Ser Phe Ser Glu Gln Thr Arg Ser Leu Asp Gly Arg Leu Gln
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Val Ser His Arg Lys Gly Leu Pro His Val Ile Tyr Cys Arg Leu Trp
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Arg Trp Pro Asp Leu His Ser His His Glu Leu Lys Ala Ile Glu Asn
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Cys Glu Tyr Ala Phe Asn Leu Lys Lys Asp Glu Val Cys Val Asn Pro
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Tyr His Tyr Gln Arg Val Glu Thr Pro Val Leu Pro Pro Val Leu Val
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Pro Arg His Thr Glu Ile Leu Thr Glu Leu Pro Pro Leu Asp Asp Tyr
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Thr His Ser Ile Pro Glu Asn Thr Asn Phe Pro Ala Gly Ile Glu Pro
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Gln Ser Asn Tyr Ile Pro Glu Thr Pro Pro Pro Gly Tyr Ile Ser Glu
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Asp Gly Glu Thr Ser Asp Gln Gln Leu Asn Gln Ser Met Asp Thr Gly
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Ser Pro Ala Glu Leu Ser Pro Thr Thr Leu Ser Pro Val Asn His Ser
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Leu Asp Leu Gln Pro Val Thr Tyr Ser Glu Pro Ala Phe Trp Cys Ser
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Ser Gln Pro Ser Leu Thr Val Asp Gly Phe Thr Asp Pro Ser Asn Ser
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Glu Arg Phe Cys Leu Gly Leu Leu Ser Asn Val Asn Arg Asn Ala Thr
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Val Glu Met Thr Arg Arg His Ile Gly Arg Gly Val Arg Leu Tyr Tyr
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                               585
Ile Gly Gly Glu Val Phe Ala Glu Cys Leu Ser Asp Ser Ala Ile Phe
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                          600
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Val Gln Ser Pro Asn Cys Asn Gln Arg Tyr Gly Trp His Pro Ala Thr
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                                           620
Val Cys Lys Ile Pro Pro Gly Cys Asn Leu Lys Ile Phe Asn Asn Gln
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                                      635
Glu Phe Ala Ala Leu Leu Ala Gln Ser Val Asn Gln Gly Phe Glu Ala
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                                   650
Val Tyr Gln Leu Thr Arg Met Cys Thr Ile Arg Met Ser Phe Val Lys
                              665
Gly Trp Gly Ala Glu Tyr Arg Arg Gln Thr Val Thr Ser Thr Pro Cys
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Trp Ile Glu Leu His Leu Asn Gly Pro Leu Gln Trp Leu Asp Lys Val
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gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc qqc
                                                                       96
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
           20
                                25
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc
                                                                      144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
                           40
                                                45
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc
                                                                      192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
                        55
                                            60
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag
                                                                      240
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
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                                        75
cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag
                                                                      288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag
                                                                      336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
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                                                    110
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc
                                                                      384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
       115
                            120
                                                125
atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac
                                                                      432
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
                       135
                                            140
aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac
                                                                      480
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
                    150
                                        155
ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc
                                                                      528
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                165
                                    170
gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc
                                                                      576
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Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly

180

| ccc | ata | cta | cta | ccc | gac | aac | cac | tac | cta | agc | acc | caσ | tcc | acc | cta | 624 |
|------------|------|------|------------|------------|------------|-----|-----|------------|------------|------------|------|------|------------|------------|------------|------|
| | | | | | Asp | | | | | | | | | | | |
| | | | | | gag Glu | | | | | | | | | | | 672 |
| gtg | | gcc | gcc | ggg | atc | | ctc | ggc | atg | gac | | ctg | tac | aag | tcc | 720 |
| Val 225 | Thr | Ala | Ala | Gly | 11e 230 | Thr | Leu | Gly | Met | Asp 235 | Glu | Leu | Tyr | Lys | Ser 240 | |
| | | | | | gct Ala | | | | | | | | | | | 768 |
| - | | _ | | 245 | | | | | 250 | | | | | 255 | • | 01.6 |
| | _ | | | _ | aat Asn | | | | _ | | _ | _ | _ | _ | _ | 816 |
| | | | 260 | | | | | 265 | | | | | 270 | | | |
| | | | _ | _ | atg Mot | _ | | - | | | | | _ | - | | 864 |
| 116 | vai | 275 | ser | ьeu | Met | Cys | 280 | AIG | GIII | сту | сту | 285 | ser | GIU | IIIL | |
| | - | | - | - | att | - | _ | _ | _ | | _ | _ | - | | | 912 |
| | 290 | _ | - | | Ile | 295 | | | | _ | 300 | | - | | _ | |
| | _ | _ | _ | _ | tct Ser | | | | _ | | | | | | - | 960 |
| 305 | Asp | Giu | ьeu | ASP | 310 | пеп | 116 | 1111 | AIA | 315 | 1111 | 1111 | ASII | СТУ | 320 | |
| | | | | | gtt | | | | | | | | | | | 1008 |
| His | Pro | Ser | Lys | Cys 325 | Val | Thr | Ile | Gln | Arg 330 | Thr | Leu | Asp | Gly | Arg 335 | Leu | |
| _ | | - | | | aaa Lys | | | | | | | | - | - | | 1056 |
| GIII | vaı | міа | 340 | ALG | пуз | СТУ | rne | 345 | птэ | vai | 116 | тут | 350 | ALG | пеа | |
| | | | | _ | ctt | | | | _ | | | | - | | | 1104 |
| _ | _ | 355 | | _ | Leu | | 360 | | | | _ | 365 | | _ | _ | |
| | | | | | gac Asp | | | | | | | | | | | 1152 |
| - | 370 | _ | | | _ | 375 | _ | - | _ | | 380 | _ | | | | 1000 |
| | | | | | gtt Val | | | | | | | | | | | 1200 |
| 385 | | -1- | | 9 | 390 | | | | 1 | 395 | | | | 1 | 400 | |
| | _ | _ | _ | | gct | | | _ | _ | _ | | _ | _ | _ | | 1248 |
| THE | ьец | GIII | ser | 405 | Ala | PIO | ser | ser | 410 | Mec | vaı | туѕ | Asp | 415 | TYL | |
| | | - | | | gga | _ | | _ | _ | | | - | | | | 1296 |
| | | _ | 420 | | Gly | | | 425 | | | | | 430 | | | |
| | | | | _ | cat | | | _ | | _ | _ | _ | | _ | | 1344 |
| 116 | GIII | 435 | iie | GIII | His | PIO | 440 | ser | ASII | ALG | на | 445 | 1111 | GIU | IIII | |
| tac | agc | acc | cca | gct | ctg | tta | gcc | cca | tct | gag | tct | aat | gct | acc | agc | 1392 |
| - | 450 | | | | Leu | 455 | | | | | 460 | | | | | |
| | | | | | aac | | | | | | | | | | | 1440 |
| 465 | Ala | Asn | Pne | Pro | Asn 470 | ire | Pro | val | Ата | 475 | rnr | ser | GTII | Pro | 480 | |
| | ata | ctg | ggg | ggc | agc | cat | agt | gaa | gga | | ttg | cag | ata | gca | | 1488 |
| Ser | Ile | Leu | Gly | Gly 485 | Ser | His | Ser | Glu | Gly 490 | Leu | Leu | Gln | Ile | Ala 495 | Ser | |
| | | _ | | | cag | _ | - | | | | | | - | | _ | 1536 |
| GLY | Pro | GIN | Pro 500 | GTÀ | Gln | GIN | GIN | Asn 505 | GTÀ | rne | rnr | сту | G1n 510 | Pro | Α1а | |
| | | | cat | | agc | | | acc | | | | | agg | | | 1584 |
| Thr | Tyr | | His | Asn | Ser | Thr | | Thr | Trp | Thr | Gly | | Arg | Thr | Ala | |
| | | 515 | | | | | 520 | | | | | 525 | | | | |

| | | | | | _ | cct Pro 535 | | | | | | | | _ | | 1632 |
|-----|-----|-----|---|-------------------|-----|-------------------|---|---|---|-----|-----|---|---|---|-----|------|
| | ccg | | _ | _ | | cat His | | | | | tgg | | - | | | 1680 |
| gag | | - | | _ | cct | ccc Pro | | | | cat | | - | | | tat | 1728 |
| | - | | | _ | | ttt Phe | - | _ | - | _ | _ | _ | | | | 1776 |
| | _ | _ | | | _ | tgc Cys | | | | | | - | | | | 1824 |
| | | | | | | cgc Arg 615 | | | | | | | | | | 1872 |
| | | | _ | _ | | gag Glu | _ | _ | | _ | | | | | | 1920 |
| | | | | | | ggt Gly | | | | | | | | | | 1968 |
| | | | | | | gta Val | | | | | | | | | | 2016 |
| | - | - | | | - | gct Ala | - | | _ | | | | _ | - | | 2064 |
| | _ | Val | | - | _ | cgt Arg 695 | _ | _ | | - | _ | _ | _ | _ | _ | 2112 |
| | | | | | | gca Ala | | | | | | | | | | 2160 |
| | | | | | | gga Gly | | - | | | | - | | - | | 2208 |
| - | _ | | _ | - | - | gga Gly | | | _ | _ | _ | | _ | _ | | 2256 |
| | | | | | | ttt Phe | | | | | | | | | | 2304 |
| | | | | | | aca Thr 775 | | | | | | | | | | 2352 |
| | _ | | _ | | | gac Asp | _ | - | | | | _ | - | | _ | 2400 |
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420
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Ile Gln Thr Ile Gln His Pro Pro Ser Asn Arg Ala Ser Thr Glu Thr
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Tyr Ser Thr Pro Ala Leu Leu Ala Pro Ser Glu Ser Asn Ala Thr Ser
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                                         460
Thr Ala Asn Phe Pro Asn Ile Pro Val Ala Ser Thr Ser Gln Pro Ala
                  470
                                     475
Ser Ile Leu Gly Gly Ser His Ser Glu Gly Leu Leu Gln Ile Ala Ser
              485
                                 490
Gly Pro Gln Pro Gly Gln Gln Gln Asn Gly Phe Thr Gly Gln Pro Ala
          500
                           505
Thr Tyr His His Asn Ser Thr Thr Thr Trp Thr Gly Ser Arg Thr Ala
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Pro Tyr Thr Pro Asn Leu Pro His His Gln Asn Gly His Leu Gln His
 530
                      535
                                        540
His Pro Pro Met Pro Pro His Pro Gly His Tyr Trp Pro Val His Asn
                  550
                                 555
Glu Leu Ala Phe Gln Pro Pro Ile Ser Asn His Pro Ala Pro Glu Tyr
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                                 570
Trp Cys Ser Ile Ala Tyr Phe Glu Met Asp Val Gln Val Gly Glu Thr
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                             585
Phe Lys Val Pro Ser Ser Cys Pro Ile Val Thr Val Asp Gly Tyr Val
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                               605
Asp Pro Ser Gly Gly Asp Arg Phe Cys Leu Gly Gln Leu Ser Asn Val
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His Arg Thr Glu Ala Ile Glu Arg Ala Arg Leu His Ile Gly Lys Gly
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                                     635
Val Gln Leu Glu Cys Lys Gly Glu Gly Asp Val Trp Val Arg Cys Leu
                                 650
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Ser Asp His Ala Val Phe Val Gln Ser Tyr Tyr Leu Asp Arg Glu Ala
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Gly Arg Ala Pro Gly Asp Ala Val His Lys Ile Tyr Pro Ser Ala Tyr
                         680
                                            685
Ile Lys Val Phe Asp Leu Arg Gln Cys His Arg Gln Met Gln Gln Gln
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Ala Ala Thr Ala Gln Ala Ala Ala Ala Gln Ala Ala Ala Val Ala
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                                     715
Gly Asn Ile Pro Gly Pro Gly Ser Val Gly Gly Ile Ala Pro Ala Ile
            725
                                 730
Ser Leu Ser Ala Ala Ala Gly Ile Gly Val Asp Asp Leu Arg Arg Leu
                             745
Cys Ile Leu Arg Met Ser Phe Val Lys Gly Trp Gly Pro Asp Tyr Pro
                         760
                                            765
Arg Gln Ser Ile Lys Glu Thr Pro Cys Trp Ile Glu Ile His Leu His
                      775
                                         780
Arg Ala Leu Gln Leu Leu Asp Glu Val Leu His Thr Met Pro Ile Ala
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                                     795
Asp Pro Gln Pro Leu Asp
               805
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<211> 3120

<212> DNA

<213> Artificial Sequence

<220>

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Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
                                     10
gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc
                                                                       96
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
                                 25
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc
                                                                      144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
                            40
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc
                                                                      192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
                                             60
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag
                                                                      240
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
                                         75
cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag
                                                                      288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                8.5
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag
                                                                      336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
            100
                               105
                                                   110
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc
                                                                      384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
                            120
                                                125
atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac
                                                                      432
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
    130
                       135
                                            140
aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aac
                                                                      480
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
                    150
                                        155
ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc
                                                                      528
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                                    170
gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc
                                                                     576
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
                                185
ccc gtg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg
                                                                     624
Pro Val Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
       195
                            200
                                                205
age aaa gae eee aac gag aag ege gat eac atg gte etg gag tte
                                                                     672
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
                       215
                                            220
gtg acc gcc gcg ggg atc act ctc ggc atg gac gag ctg tac aag tcc
                                                                     720
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
                   230
gga ctc aga tct acc atg gcg ggc tgg atc cag gcc cag cag ctg cag
                                                                     768
Gly Leu Arg Ser Thr Met Ala Gly Trp Ile Gln Ala Gln Gln Leu Gln
                245
                                    250
gga gac gcg ctg cgc cag atg cag gtg ctg tac ggc cag cac ttc ccc
                                                                     816
Gly Asp Ala Leu Arg Gln Met Gln Val Leu Tyr Gly Gln His Phe Pro
                                265
```

<223> EGFP-Stat5 fusion

864

atc gag gtc cgg cac tac ttg gcc cag tgg att gag agc cag cca tgg

| Ile | Glu | Val | Ara | His | Tvr | Leu | Ala | Gln | Trp | Ile | Glu | Ser | Gln | Pro | Trp | |
|------------|-------------------|-------------------|------------|-------------------|------------|-------------------|------------|------------|-------------------|------------|-------------------|------------|------------|-------------------|------------|------|
| | | 275 | _ | | _ | | 280 | | _ | | | 285 | | | | |
| - | _ | att Ile | _ | _ | - | | | _ | - | - | _ | | | | | 912 |
| | | gag Glu | | | | | | | | | | | | | | 960 |
| gtg | | gaa Glu | - | | ttt | | _ | _ | | aag | - | | | | gcc | 1008 |
| - | _ | ctc Leu | _ | | | | - | _ | - | | _ | | _ | - | - | 1056 |
| - | | cgg Arg 355 | | | _ | | | - | _ | | _ | _ | - | - | - | 1104 |
| | | tgc Cys | _ | | _ | _ | | | _ | _ | - | _ | - | | | 1152 |
| | | ctt Leu | | | | | | | | | | | | | | 1200 |
| | | aca Thr | | | | | | | | | | | | | | 1248 |
| | | atc Ile | | | | | | | | | | | | | | 1296 |
| | | gcc Ala 435 | | | | | | | | | | | | | | 1344 |
| ctc Leu | cag Gln 450 | cag Gln | aag Lys | cag Gln | gtg Val | tct Ser 455 | ctg Leu | gag Glu | gcc Ala | tgg Trp | ttg Leu 460 | cag Gln | cgt Arg | gag Glu | gca Ala | 1392 |
| | | ctg Leu | | | | | | | | | | | | | | 1440 |
| | | cag Gln | | | | | | | | | | | | | | 1488 |
| | | cag Gln | | | | | | | | | | | | | | 1536 |
| | | ggc Gly 515 | | | | | | | | | | | | | | 1584 |
| | | atc Ile | | _ | | | _ | _ | | _ | | - | | | | 1632 |
| | | cag Gln | | | | | | | | | | | | | | 1680 |
| gtc Val | aac Asn | gcc Ala | acc Thr | atc Ile 565 | acg Thr | gac Asp | att Ile | atc Ile | tca Ser 570 | gcc Ala | ctg Leu | gtg Val | acc Thr | agc Ser 575 | aca Thr | 1728 |
| | | att Ile | | | | | | | | | | | | | | 1776 |
| | | gcc Ala 595 | | | | | | | | | | | | | | 1824 |
| atg | aat | ccc | ccc | cag | gtg | aag | gcc | acc | atc | atc | agt | gag | cag | cag | gcc | 1872 |

| Mot | 7 ~~ | Dwa | Desc | C1- | 1701 | T | 71- | m 1 | ~ 7 - | -7 - | a | G1 | G1 - | 01 - | 7 7. | |
|------------------|-------|------------|----------|------------|------------|-------------|------------|-------------|--------------|-------------|-------------|----------|---------|-------------|-------------|-------|
| | 610 | | | | Val | 615 | | | | | 620 | | | | | |
| aag | tct | ctg | ctt | aaa | aat | gag | aac | acc | cgc | aac | gag | tgc | agt | ggt | gag | 1920 |
| | | Leu | Leu | Lys | Asn | Glu | Asn | Thr | Arg | | Glu | Cys | Ser | Gly | | |
| 625 | | | | | 630 | | - 1. | | | 635 | | | | | 640 | |
| atc | ctg | aac | aac | tgc | tgc | gtg | atg | gag | tac | cac | caa | gcc | acg | ggc | acc | 1968 |
| тте | ьeu | Asn | Asn | | Cys | vaı | Met | Glu | | His | GIn | Ala | Thr | | Thr | |
| | | | | 645 | | | | | 650 | | | | | 655 | | |
| Ctc | agt | gcc | cac | ttc | agg | aac | atg | tca | ctg | aag | agg | atc | aag | cgt | gct | 2016 |
| Leu | ser | Ата | | Phe | Arg | Asn | Met | | Leu | Lys | Arg | Ile | _ | Arg | Ala | |
| | | | 660 | | | | | 665 | | | | | 670 | | | |
| gac | cgg | cgg | ggt | gca | gag | tcc | gtg | aca | gag | gag | aag | ttc | aca | gtc | ctg | 2064 |
| Asp | Arg | | GTA | Ата | Glu | Ser | | Thr | GLu | Glu | Lys | | Thr | Val | Leu | |
| +++ | ~~~ | 675 | | | | | 680 | | | | | 685 | | | | 0110 |
| Pho | Clu | 201 | Cla | Dho | agt | gtt | ggc | agc | aat | gag | CLL | gtg | TTC | cag | gtg | 2112 |
| rne | 690 | ser | GIII | Pne | Ser | | сту | ser | Asn | GIU | | vaı | Pne | GIN | vaı | |
| 224 | | a+~ | + | a+ a | + | 695 | -4-4- | | _ 4 | | 700 | | | | | 01.00 |
| Tue | Thr | Tou | 202 | Ton | cct | gra | gul | gtc | atc | gtc | cac | ggc | agc | cag | gac | 2160 |
| 705 | 1111 | neu | ser | ьец | Pro 710 | Val | vaı | Val | тте | | HIS | GTA | ser | GIN | - | |
| | 22+ | ~~~ | 200 | aat | | ~+ <i>~</i> | a+ ~ | + ~~ | ~~~ | 715 | | | | | 720 | 2200 |
| His | Agn | Δla | Thr | Ala | act Thr | y Ly | Tou | Trn | yac | Aat Aan | 712 | Dho | get | gag | ccg | 2208 |
| 1113 | 21511 | пта | 1111 | 725 | 1111 | vai | пеп | тър | 730 | ASII | Ala | Pne | Ата | 735 | PLO | |
| aac | add | ata | cca | | gcc | ata | cct | asc. | | ata | ata | + ~ ~ | 000 | | ata | 2256 |
| Glv | Ara | Val | Pro | Phe | Ala | Val | Dro | Aen | Luc | y cy Val | Tou | Trn | Dro. | Cln | Lou | 2256 |
| O _T y | 23E G | Val | 740 | THE | ALG | Val | 110 | 745 | цуз | Val | цец | пр | 750 | GIII | Leu | |
| tat | gag | aca | | aac | atg | aaa | ttc | | acc | gaa | ata | cad | | aac | caa | 2304 |
| Cvs | Glu | Ala | Leu | Asn | Met | Lvs | Phe | Lvs | Ala | Glu | Val | Gln | Ser | Aen | Ara | 2304 |
| -] - | | 755 | | | | 2,0 | 760 | L y0 | 711.0 | O L u | vai | 765 | DCI | ASII | ALG | |
| aac | cta | | aaσ | gag | aac | ata | | ttc | cta | aca | саσ | | cta | ttc | aac | 2352 |
| Glv | Leu | Thr | Lvs | Glu | Asn | Leu | Val | Phe | Len | Ala | Gln | Lvs | Leu | Phe | Asn | 2332 |
| - | 770 | | | | | 775 | | | | | 780 | 270 | | - 110 | 11011 | |
| aac | agc | agc | agc | cac | ctg | | gac | tac | agt | aac | | tcc | ata | tcc | t.aa | 2400 |
| | | | | | Leu | | | | | | | | | | | 2.00 |
| 785 | | | | | 790 | | - | - | | 795 | | | | | 800 | |
| tcc | cag | ttc | aac | agg | gag | aac | ttq | ccq | qqc | taa | aac | tac | acc | ttc | | 2448 |
| | | | | | Glu | | | | | | | | | | | |
| | | | | 805 | | | | | 810 | - | | 4 | | 815 | L - | |
| cag | tgg | ttt | gac | ggg | gtg | atg | gag | gtg | ttg | aag | aag | cac | cac | aag | ccc | 2496 |
| Gln | Trp | Phe | Asp | Gly | Val | Met | Glu | Val | Leu | Lys | Lys | His | His | Lys | Pro | |
| | | | 820 | | | | | 825 | | _ | _ | | 830 | _ | | |
| | | | | | gcc | | | | | | | | | | | 2544 |
| His | Trp | Asn | Asp | Gly | Ala | Ile | Leu | Gly | Phe | Val | Asn | Lys | Gln | Gln | Ala | |
| | | 835 | | | | | 840 | | | | | 845 | | | | |
| | | | | | aac | | | | | | | | | | | 2592 |
| His | | Leu | Leu | Ile | Asn | | Pro | Asp | Gly | Thr | Phe | Leu | Leu | Arg | Phe | |
| | 850 | | | | | 855 | | | | | 860 | | | | | |
| agt | gac | tca | gaa | atc | ggg | ggc | atc | acc | atc | gcc | tgg | aag | ttt | gac | tcc | 2640 |
| | Asp | Ser | Glu | Ile | Gly | Gly | Ile | Thr | Ile | | Trp | Lys | Phe | Asp | | |
| 865 | | | | | 870 | | | | | 875 | | | | | 880 | |
| | | | | | tgg | | | | | | | | | | | 2688 |
| Pro | GLu | Arg | Asn | | Trp | Asn | Leu | Lys | | Phe | Thr | Thr | Arg | _ | Phe | |
| + | a = - | | . | 885 | | - | | | 890 | | | _ | | 895 | | 0505 |
| | | | | | gct | | | | | | | | | | | 2736 |
| ser | тте | Arg | | ьeu | Ala | Asp | Arg | | стА | Asp | ren | ser | | ьeu | тте | |
| + - + | a+~ | +++ | 900 | ~~~ | 000 | | | 905 | ~ | ~+~ | ++- | . | 910 | - - | | 2764 |
| ru.~ | y Ly | Dha | Dro | yac Nan | cgc | Dra | aag | yat | gag | gcc | DE- | CCC | aag | cac | Lac | 2784 |
| т Ут | vaı | 915 | LIO | nsp | Arg | LTO | ьуs 920 | ASP | GIU | vdl | rne | 925 | тЛ2 | туr | T A L | |
| act | cct | | cta | act | aaa | act. | | ~ = + | ~~~ | + = + | ~+~ | | 000 | ~~~ | ata | 2022 |
| Thr | Pro | yuy Val | Tan | gct ∆ls | Lys | yu. Ala | yıl Vəl | yaı Den | Gl | ual Tur | y cy V=1 | Luc | Dra | Cay | Tlo | 2832 |
| **** | 930 | * U.I. | 1.cu | | دوب | 935 | · aı | asp | GT Å | TÀT | 940. | | FIO | GIII | TT6 | |
| aaa | | ata | atc | aat | gag | | ata | aat | aca | tct | | | act | aaa | aac | 2880 |
| | 244 | 9-9 | 900 | | 949 | | 9-9 | معد | gea | | yea | guc | gui | 999 | 990 | 2000 |

```
Lys Gln Val Val Pro Glu Phe Val Asn Ala Ser Ala Asp Ala Gly Gly
                      950
                                             955
age age gee acq tac atg gae cag gee eec tee eea get gtg tge eec
                                                                             2928
Ser Ser Ala Thr Tyr Met Asp Gln Ala Pro Ser Pro Ala Val Cys Pro
                  965
                                        970
cag gct ccc tat aac atg tac cca cag aac cct gac cat gta ctc gat
                                                                             2976
Gln Ala Pro Tyr Asn Met Tyr Pro Gln Asn Pro Asp His Val Leu Asp
                                   985
cag gat gga gaa ttc gac ctg gat gag acc atg gat gtg gcc agg cac
                                                                             3024
Gln Asp Gly Glu Phe Asp Leu Asp Glu Thr Met Asp Val Ala Arg His
                           1000
       995
                                                      1005
gtg gag gaa ctc tta cgc cga cca atg gac agt ctt gac tcc cgc
Val Glu Glu Leu Arg Arg Pro Met Asp Ser Leu Asp Ser Arg
                                                                             3069
   1010
                           1015
                                                1020
ctc tcg ccc cct gcc ggt ctt ttc acc tct gcc aga ggc tcc ctc
Leu Ser Pro Pro Ala Gly Leu Phe Thr Ser Ala Arg Gly Ser Leu
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 1025
                          1030
                                                   1035
tca tqa
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Ser
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<211> 1039

<212> PRT

<213> Artificial Sequence

<220>

<223> EGFP-Stat5 fusion

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200

```
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
            215
   210
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
                   230
                                       235
Gly Leu Arg Ser Thr Met Ala Gly Trp Ile Gln Ala Gln Gln Leu Gln
                                   250
               245
Gly Asp Ala Leu Arg Gln Met Gln Val Leu Tyr Gly Gln His Phe Pro
                               265
Ile Glu Val Arg His Tyr Leu Ala Gln Trp Ile Glu Ser Gln Pro Trp
                          280
                                             285
Asp Ala Ile Asp Leu Asp Asn Pro Gln Asp Arg Ala Gln Ala Thr Gln
                      295
                                           300
Leu Leu Glu Gly Leu Val Gln Glu Leu Gln Lys Lys Ala Glu His Gln
                   310
                                       315
Val Gly Glu Asp Gly Phe Leu Leu Lys Ile Lys Leu Gly His Tyr Ala
                                                      335
                                  330
               325
Thr Gln Leu Gln Lys Thr Tyr Asp Arg Cys Pro Leu Glu Leu Val Arg
                              345
          340
Cys Ile Arg His Ile Leu Tyr Asn Glu Gln Arg Leu Val Arg Glu Ala
                          360
                                           365
Asn Asn Cys Ser Ser Pro Ala Gly Ile Leu Val Asp Ala Met Ser Gln
            375
Lys His Leu Gln Ile Asn Gln Thr Phe Glu Glu Leu Arg Leu Val Thr
                                       395
                   390
Gln Asp Thr Glu Asn Glu Leu Lys Lys Leu Gln Gln Thr Gln Glu Tyr
                                   410
               405
Phe Ile Ile Gln Tyr Gln Glu Ser Leu Arg Ile Gln Ala Gln Phe Ala
                               425
           420
                                                   430
Gln Leu Ala Gln Leu Ser Pro Gln Glu Arg Leu Ser Arg Glu Thr Ala
       435
                           440
                                              445
Leu Gln Gln Lys Gln Val Ser Leu Glu Ala Trp Leu Gln Arg Glu Ala
                       455
Gln Thr Leu Gln Gln Tyr Arg Val Glu Leu Ala Glu Lys His Gln Lys
                   470
                                      475
Thr Leu Gln Leu Leu Arg Lys Gln Gln Thr Ile Ile Leu Asp Asp Glu
              485
                                  490
Leu Ile Gln Trp Lys Arg Arg Gln Gln Leu Ala Gly Asn Gly Gly Pro
                              505
Pro Glu Gly Ser Leu Asp Val Leu Gln Ser Trp Cys Glu Lys Leu Ala
                          520
      515
Glu Ile Ile Trp Gln Asn Arg Gln Gln Ile Arg Arg Ala Glu His Leu
                       535
                                           540
Cys Gln Gln Leu Pro Ile Pro Gly Pro Val Glu Glu Met Leu Ala Glu
                                       555
                   550
Val Asn Ala Thr Ile Thr Asp Ile Ile Ser Ala Leu Val Thr Ser Thr
                                   570
Phe Ile Ile Glu Lys Gln Pro Pro Gln Val Leu Lys Thr Gln Thr Lys
                               585
           580
Phe Ala Ala Thr Val Arg Leu Leu Val Gly Gly Lys Leu Asn Val His
                           600
Met Asn Pro Pro Gln Val Lys Ala Thr Ile Ile Ser Glu Gln Gln Ala
                       615
                                           620
Lys Ser Leu Leu Lys Asn Glu Asn Thr Arg Asn Glu Cys Ser Gly Glu
                  630
                                      635
Ile Leu Asn Asn Cys Cys Val Met Glu Tyr His Gln Ala Thr Gly Thr
                                            655
               645
                                   650
Leu Ser Ala His Phe Arg Asn Met Ser Leu Lys Arg Ile Lys Arg Ala
          660
                               665
Asp Arg Arg Gly Ala Glu Ser Val Thr Glu Glu Lys Phe Thr Val Leu
                           680
                                               685
Phe Glu Ser Gln Phe Ser Val Gly Ser Asn Glu Leu Val Phe Gln Val
                       695
Lys Thr Leu Ser Leu Pro Val Val Val Ile Val His Gly Ser Gln Asp
```

```
705
                  710
His Asn Ala Thr Ala Thr Val Leu Trp Asp Asn Ala Phe Ala Glu Pro
              725
                                 730
Gly Arg Val Pro Phe Ala Val Pro Asp Lys Val Leu Trp Pro Gln Leu
                             745
Cys Glu Ala Leu Asn Met Lys Phe Lys Ala Glu Val Gln Ser Asn Arg
      755
                        760
                                            765
Gly Leu Thr Lys Glu Asn Leu Val Phe Leu Ala Gln Lys Leu Phe Asn
        775
                                       780
Asn Ser Ser Ser His Leu Glu Asp Tyr Ser Gly Leu Ser Val Ser Trp
                                    795
                  790
Ser Gln Phe Asn Arg Glu Asn Leu Pro Gly Trp Asn Tyr Thr Phe Trp
           805
                                810
Gln Trp Phe Asp Gly Val Met Glu Val Leu Lys Lys His His Lys Pro
       820
                          825
His Trp Asn Asp Gly Ala Ile Leu Gly Phe Val Asn Lys Gln Gln Ala
                        840
His Asp Leu Leu Ile Asn Lys Pro Asp Gly Thr Phe Leu Leu Arg Phe
        855
                             860
Ser Asp Ser Glu Ile Gly Gly Ile Thr Ile Ala Trp Lys Phe Asp Ser
                870
                                    875
Pro Glu Arg Asn Leu Trp Asn Leu Lys Pro Phe Thr Thr Arg Asp Phe
              885
                                890
Ser Ile Arg Ser Leu Ala Asp Arg Leu Gly Asp Leu Ser Tyr Leu Ile
                            905
Tyr Val Phe Pro Asp Arg Pro Lys Asp Glu Val Phe Ser Lys Tyr Tyr
                         920
                                           925
Thr Pro Val Leu Ala Lys Ala Val Asp Gly Tyr Val Lys Pro Gln Ile
                    935
                                       940
Lys Gln Val Val Pro Glu Phe Val Asn Ala Ser Ala Asp Ala Gly Gly
                 950
                                    955
Ser Ser Ala Thr Tyr Met Asp Gln Ala Pro Ser Pro Ala Val Cys Pro
           965 970
Gln Ala Pro Tyr Asn Met Tyr Pro Gln Asn Pro Asp His Val Leu Asp
          980
                985
Gln Asp Gly Glu Phe Asp Leu Asp Glu Thr Met Asp Val Ala Arg His
     995
              1000
                                           1005
Val Glu Glu Leu Leu Arg Arg Pro Met Asp Ser Leu Asp Ser Arg
                      1015
                                         1020
Leu Ser Pro Pro Ala Gly Leu Phe Thr Ser Ala Arg Gly Ser Leu
                      1030
                                          1035
Ser
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<211> 1875

<212> DNA

<213> Artificial Sequence

<220>

<223> mERK1-F64L-S65T-GFP fusion

<220>

<221> CDS

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| Met | gcg Ala | gcg Ala | gcg Ala | Ala | gcg Ala | gct Ala | ccg Pro | ggg Gly | Gly | ggg Gly | ggc Gly | ggg Gly | gag Glu | Pro | agg Arg | 48 |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | | 0.0 |
| Gly | Thr | Ala | 999 Gly 20 | Val | Val | Pro | Val | Val 25 | Pro | ggg Gly | gag Glu | Val | gag Glu 30 | Val | Val | 96 |
| | | | | | | | | | | | | | ctg Leu | | | 144 |
| | | | | | | | | | | | | | gac Asp | | | 192 |
| | | | | | - | | _ | _ | | _ | | | gag Glu | | | 240 |
| | | | | | | | | | | | | | ctg Leu | | | 288 |
| | | | | | | | | | | | | | gcg Ala 110 | | | 336 |
| | | | | | - | - | | | - | _ | _ | | atg Met | | | 384 |
| | | | | | | | | | | | | | gac Asp | | | 432 |
| | | | | | | | | | | | aag | | ata Ile | | | 480 |
| gcc | | | | | cgg | | | | | tcc | | | ctt Leu | | aac | 528 |
| | | | | | | | | | | | | | cgg Arg 190 | att | | 576 |
| | | | | | | | | | | | | | gtg Val | | | 624 |
| | | | | | | | | | | | | | ggc Gly | | | 672 |
| | | | | | | | | | | | | | gag Glu | | | 720 |
| | | | | | | | | | | | | | cag Gln | | | 768 |
| | | | | | | | | | | | | | ctt Leu 270 | | | 816 |
| | | | _ | _ | _ | - | | | _ | _ | | _ | ccc Pro | - | | 864 |
| | _ | | - | | - | _ | | | | | | - | tcc Ser | | - | 912 |
| ctt | gac | ctg | ctg | gac | cgg | atg | tta | acc | ttc | aac | cca | aac | aag | cgc | atc | 960 |

| Leu 305 | Asp | Leu | Leu | Asp | Arg 310 | Met | Leu | Thr | Phe | Asn 315 | Pro | Asn | Lys | Arg | Ile 320 | |
|------------|------------|------------|------------|-------------------|------------|------------|------------|------------|-------------------|------------|------------|------------|------------|-------------------|------------|------|
| | | | | | | | | | | | | | | tac Tyr 335 | | 1008 |
| _ | | _ | _ | | | - | | | | | | | - | atg Met | | 1056 |
| | | | | | | | | | | | | | | cag Gln | | 1104 |
| | | | | | | | | | | | | | | gcc Ala | | 1152 |
| _ | | | - | - | | | | | - | _ | | | | gtt Val | _ | 1200 |
| | | | | | | | | | | | | | | gag Glu 415 | | 1248 |
| Glu | Gly | Asp | Ala 420 | Thr | Tyr | Gly | Lys | Leu 425 | Thr | Leu | Lys | Phe | Ile 430 | tgc Cys | Thr | 1296 |
| Thr | Gly | Lys 435 | Leu | Pro | Val | Pro | Trp 440 | Pro | Thr | Leu | Val | Thr 445 | Thr | ctc Leu | Thr | 1344 |
| Tyr | Gly 450 | Val | Gln | Cys | Phe | Ser 455 | Arg | Tyr | Pro | Asp | His 460 | Met | Lys | cag Gln | His | 1392 |
| | | | | | | | | | | | | | | aga Arg | | 1440 |
| ata Ile | ttt Phe | tac Tyr | aaa Lys | gat Asp 485 | gac Asp | ggg Gly | aac Asn | tac Tyr | aag Lys 490 | aca Thr | cgt Arg | gct Ala | gaa Glu | gtc Val 495 | aag Lys | 1488 |
| | - | | - | | | _ | | _ | | | | | | att Ile | - | 1536 |
| | | _ | _ | | | | | | | | | | | aat Asn | | 1584 |
| Asn | Ser 530 | His | Asn | Val | Tyr | Ile 535 | Met | Āla | Āsp | Lys | Pro 540 | Lys | Asn | ggc Gly | Ile | 1632 |
| Lys 545 | Val | Asn | Phe | Lys | Ile 550 | Arg | His | Asn | Ile | Lys 555 | Asp | Gly | Ser | gtt Val | Gln 560 | 1680 |
| | | | | | | | | | | | | | | cct Pro 575 | | 1728 |
| Leu | Leu | Pro | Asp 580 | Asn | His | Tyr | Leu | Ser 585 | Thr | Gln | Ser | Ala | Leu 590 | tcc Ser | Lys | 1776 |
| | | | | | | | | | | | | | | gta Val | | 1824 |
| | | | | | | | | | | | | | | cag Gln | | 1872 |
| taa | | | | | | | | | | | | | | | | 1875 |

<211> 624

<212> PRT

<213> Artificial Sequence

<220>

<223> mERK1-F64L-S65T-GFP fusion

<400> 57

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Thr Ala Arg Phe Gln Pro Gly Ala Pro Glu Gly Pro Gly Arg Ala Met 375 Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu 390 395 Leu Asp Gly Asp Val Asn Gly Gln Lys Phe Ser Val Ser Gly Glu Gly 410 Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr 420 425 Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu Thr 435 440 445 Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln His 450 455 460 Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg Thr 470 475 Ile Phe Tyr Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val Lys 485 490 Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile Asp 500 505 Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Met Glu Tyr Asn Tyr 520 525 Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Pro Lys Asn Gly Ile 535 Lys Val Asn Phe Lys Ile Arg His Asn Ile Lys Asp Gly Ser Val Gln 550 555 Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro Val 570 Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser Lys 580 585 Asp Pro Asn Glu Lys Arg Asp His Met Ile Leu Leu Glu Phe Val Thr 600 605 Ala Ala Gly Ile Thr His Gly Met Asp Glu Leu Tyr Lys Pro Gln Glu 615 <210> 58 <211> 1815 <212> DNA <213> Artificial Sequence <220> <223> Erk2-EGFP fusion <220> <221> CDS <222> (1)..(1812) <400> 58 atg gcg gcg gcg gcg gcg ggc ccg gag atg gtc cgc ggg cag gtg 48 Met Ala Ala Ala Ala Ala Gly Pro Glu Met Val Arg Gly Gln Val 10 ttc gac gtg ggg ccg cgc tac act aat ctc tcg tac atc gga gaa ggc 96 Phe Asp Val Gly Pro Arg Tyr Thr Asn Leu Ser Tyr Ile Gly Glu Gly 20

| 144 Alta Tyr Gify Met Val Cys Ser Ala Tyr Asp Asn Leu Asn Lys Val Arg | | | | | | | | | | | | | | | | | |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| Val Ala Tie Lys Lys Ile Ser Pro Phe Giu His Gin Thr Tyr Cys Gin 50 50 35 60 20 240 | | | Gly | | | | | Ala | | | | | Asn | | | | 144 |
| aga acc ctg aga gag ata aaa atc cta ctg cgc ttc aga cat gag aac 240 Arg Thr Leu Arg Glu IIe Ly IIe Leu Leu Arg Phe Arg His Glu Asn 765 80 65 70 75 atc atc ggc atc at gag atc atc atc cgg gca cca acc att gag cag atg 11e IIe Gly IIe Asn Asp IIe IIe Arg Ala Pro Thr IIe Glu Gln Met 85 90 aaa gat gta tat ata gta cag gac ct ca atg gag acc gat ctt tac aag Lys Asp Val Tyr IIe Val Gln Asp Leu Met Glu Thr Asp Leu Tyr Lys 100 100 ctt ttg aag aca cag cac ctc agc aat gat cat atc tgc tat ttt ctt 384 384 Leu Leu Lys Thr Gln His Leu Ser Asn Asp His IIe Cys Tyr Phe Leu 115 120 tac cag gac ctc aga agg tta cat aat ata cat tca gct aat gtt ctg 115 120 tac cag atc ctg aga gga tta aag tat ata acat tca gct aat gtt ctg 116 480 Tyr Gln IIe Leu Arg Gly Leu Lys Tyr IIe His Ser Ala Asn Val Leu 130 135 cac gt gac ctc aga ct tt gag ctt gc gc ttg gat Cac act ttgt gat His Arg Asp Leu Lys Pro Ser Asn Leu Leu Asn Thr Thr Cys Asp 145 160 cta aga atc ttg gac ttt gc ctt gc tgt gt ga gat ca gat cat aca ggg ttg tat gac aga cat gat gat gat gat gat gat gat gat gat g | | Ãla | | | | | Ser | | | | | Gln | | | | | 192 |
| The The Siy Tie Asn Asp Tie Tie Arg Ala Pro Thr Tie Glu Gin Met | Arg | acc | | | | Ile | | | | | Arg | | | | | Asn | 240 |
| Lys Asp Val Tyr Ile Val Gln Asp Leu Met Glu Thr Asp Leu Tyr Lys 100 toto ttg aag aca cag cac ctc agc aat gat cat atc tgc tat ttt ctt 384 Leu Leu Lys Thr Gln His Leu Ser Asn Asp His Ile Cys Tyr Phe Leu 115 120 125 125 126 116 116 Leu Arg Gly Leu Lys Tyr Ile His Ser Ala Ash Ash Val Leu 130 135 135 140 140 140 140 150 155 160 160 140 155 160 160 160 160 160 160 160 160 160 160 | | | | | Asn | - | | | | Ala | | | | | Gln | _ | 288 |
| Leu Leu Lys Thr Gln His Leu Ser Asn Asp His Ile Cys Tyr Phe Leu 115 | | | | Tyr | | | | | Leu | | | | | Leu | | | 336 |
| Tyr Gln Ile Leu Arg Gly Leu Lys Tyr Ile His Ser Ala Asn Val Leu 130 cac cgt gac ctc aag cct tcc aac ctc ctg ctg aac acc act tgt gat 480 His Arg Asp Leu Lys Pro Ser Asn Leu Leu Leu Asn Thr Thr Cys Asp 145 150 ctc aag atc tgt gac ttt ggc ctg gcc cgt gtt gca gat cca gac cat 528 Leu Lys Ile Cys Asp Phe Gly Leu Ala Arg Val Ala Asp Pro Asp His 165 gat cat aca ggg ttc ttg aca gag tat gta gcc acg cgt tgg tac aga 576 Asp His Thr Gly Phe Leu Thr Glu Tyr Val Ala Thr Arg Trp Tyr Arg 180 gct cca gaa att atg ttg act cca aga ggt tat acc aag tcc att gat gat 190 gct cca gaa att atg ttg act cca aga ggt tat acc aag tcc att gat acc aga ttg tg tac aga 190 gct cca gaa att atg ttg act cca gag aga gt tat acc aag tcc att gat act acc aga ggt tat tac acc aga tcc att gat acc aga ttc tc acc aga ggt tat acc aag tcc att gat acc acc act ctg gca gag att gt gt acc aga ttc gat acc acc acc acc acc acc grace att tag att tgg tcd tgg ggc tgc atc ctg gca gag atg cta tcc acc acc acc acc acc acc ggt acc act acc acc gga acc act tac acc gga acc acc acc acc acc acc acc a | | | Lys | | | | | Ser | | | | | Cys | | | | 384 |
| His Arg Asp Leu Lys Pro Ser Asn Leu Leu Leu Asn Thr Thr Cys Asp 145 | | Gln | | _ | _ | | Leu | - | | | | Ser | - | | _ | _ | 432 |
| Leu Lys | His | | | | | Pro | | | | | Leu | | | | | Asp | 480 |
| Asp His Thr Gly Phe Leu Thr Glu Tyr Val Ala Thr Arg Trp Tyr Arg 180 | | | | | Asp | | | | | Arg | | | | | Asp | | 528 |
| Ala Pro Glu Ile Met Leu Asn Ser Lys Gly Tyr Thr Lys Ser Ile Asp 195 200 205 205 205 205 205 205 205 205 20 | | | | Gly | | | | | Tyr | | | | | Trp | | | 576 |
| Trp Ser Val Gly Cys Ile Leu Ala Glu Met Leu Ser Asn Arg Pro 210 215 220 225 | _ | | Ğlu | | _ | _ | | Ser | - | | | | Lys | | | _ | 624 |
| The Phe Pro Gly Lys His Tyr Leu Asp Gln Leu Asp His Tle Leu Gly 240 | | Trp | | | | _ | Ile | _ | - | | _ | Leu | | | | | 672 |
| The Leu Gly Ser Pro Ser Gln Glu Asp Leu Asn Cys Ile Ile Asn Leu 255 | Ile | | | | | His | | | | | Leu | | | | | Gly | 720 |
| Lys Ala Arg Asn Tyr Leu Leu Ser Leu Pro His Lys Asn Lys Val Pro 260 | | | | | Pro | | | | | Leu | | | | | Asn | | 768 |
| Trp Asn Arg Leu Phe Pro Asn Ala Asp Ser Lys Ala Leu Asp Leu Leu 275 | | | | Asn | | | | | Leu | | | | | Lys | | | 816 |
| Asp Lys Met Leu Thr Phe Asn Pro His Lys Arg Ile Glu Val Glu Gln 290 295 300 960 gct ctg gcc cac ccg tac ctg gag cag tat tat gac cca agt gat gag 960 Ala Leu Ala His Pro Tyr Leu Glu Gln Tyr Tyr Asp Pro Ser Asp Glu 305 310 315 320 ccc att gct gaa gca cca ttc aag ttt gac atg gag ctg gac gac tta 1008 Pro Ile Ala Glu Ala Pro Phe Lys Phe Asp Met Glu Leu Asp Asp Leu 325 330 335 cct aag gag aag ctc aaa gaa ctc att ttt gaa gag act gct cga ttc 1056 Pro Lys Glu Lys Leu Lys Glu Leu Ile Phe Glu Glu Thr Ala Arg Phe 340 345 50 cag cca gga tac aga tct atg gat cca ccg gtc gcc acc atg gtg agc 1104 Gln Pro Gly Tyr Arg Ser Met Asp Pro Pro Val Ala Thr Met Val Ser | | | Arg | | | | | Āla | _ | | | - | Leu | _ | | _ | 864 |
| Ala Leu Ala His Pro Tyr Leu Glu Gln Tyr Tyr Asp Pro Ser Asp Glu 305 310 315 320 ccc att gct gaa gca cca ttc aag ttt gac atg gag ctg gac gac tta 1008 Pro Ile Ala Glu Ala Pro Phe Lys Phe Asp Met Glu Leu Asp Asp Leu 325 330 335 cct aag gag aag ctc aaa gaa ctc att ttt gaa gag act gct cga ttc Pro Lys Glu Lys Leu Lys Glu Leu Ile Phe Glu Glu Thr Ala Arg Phe 340 345 350 cag cca gga tac aga tct atg gat cca ccg gtc gcc acc atg gtg agc Gln Pro Gly Tyr Arg Ser Met Asp Pro Pro Val Ala Thr Met Val Ser | _ | Lys | _ | | | | Asn | | | - | | Ile | _ | _ | _ | _ | 912 |
| Pro Ile Ala Glu Ala Pro Phe Lys Phe Asp Met Glu Leu Asp Asp Leu 325 330 335 cct aag gag aag ctc aaa gaa ctc att ttt gaa gag act gct cga ttc Pro Lys Glu Lys Leu Lys Glu Leu Ile Phe Glu Glu Thr Ala Arg Phe 340 345 350 cag cca gga tac aga tct atg gat cca ccg gtc gcc acc atg gtg agc 1104 Gln Pro Gly Tyr Arg Ser Met Asp Pro Pro Val Ala Thr Met Val Ser | Āla | _ | - | | - | Tyr | _ | | _ | | Tyr | - | | | - | Glu | 960 |
| Pro Lys Glu Lys Leu Lys Glu Leu Ile Phe Glu Glu Thr Ala Arg Phe 340 345 350 cag cca gga tac aga tct atg gat cca ccg gtc gcc acc atg gtg agc 1104 Gln Pro Gly Tyr Arg Ser Met Asp Pro Pro Val Ala Thr Met Val Ser | | | | | Āla | | | | | Asp | | | | | Asp | | 1008 |
| Gln Pro Gly Tyr Arg Ser Met Asp Pro Pro Val Ala Thr Met Val Ser | | | | Lys | | | | | Ile | | | | | Ala | | | 1056 |
| | | | Gly | Tyr | | | | Asp | | | | | Thr | | | | 1104 |

```
aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg gtc gag ctg
                                                                     1152
Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu Leu
                        375
gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc gag ggc gag
                                                                     1200
Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly Glu
                                         395
                    390
385
                                                                     1248
ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc tgc acc acc
Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr Thr
                405
                                     410
ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc ctg acc tac
                                                                     1296
Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu Thr Tyr
                                 425
                                                                     1344
ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag cag cac gac
Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln His Asp
                            440
                                                445
ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag cgc acc atc
                                                                     1392
Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg Thr Ile
                                             460
                        455
                                                                     1440
ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag gtg aag ttc
Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val Lys Phe
                                        475
                    470
gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc atc gac ttc
                                                                     1488
Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile Asp Phe
                                     490
                485
                                                                     1536
aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac aac tac aac
Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn Tyr Asn
                                 505
            500
ago cao aac gto tat ato atg goo gao aag cag aag aac ggo ato aag
                                                                      1584
Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly Ile Lys
                                                 525
                             520
        515
gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc gtg cag ctc
                                                                      1632
Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val Gln Leu
                         535
gec gac cac tac cag cag aac acc ecc ate gge gae gge ecc gtg etg
                                                                      1680
Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro Val Leu
                                        555
                    550
ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg agc aaa gac
                                                                      1728
Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser Lys Asp
                                     570
                                                         575
                565
ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc gtg acc gcc
                                                                      1776
Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val Thr Ala
            580
                                 585
gcc ggg atc act ctc ggc atg gac gag ctg tac aag taa
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Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys
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<211> 604

<212> PRT

<213> Artificial Sequence

<220>

<223> Erk2-EGFP fusion

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Ala Tyr Gly Met Val Cys Ser Ala Tyr Asp Asn Leu Asn Lys Val Arg
                           40
                                               45
Val Ala Ile Lys Lys Ile Ser Pro Phe Glu His Gln Thr Tyr Cys Gln
                      55
Arg Thr Leu Arg Glu Ile Lys Ile Leu Leu Arg Phe Arg His Glu Asn
                                       75
                 70
Ile Ile Gly Ile Asn Asp Ile Ile Arg Ala Pro Thr Ile Glu Gln Met
                                   90
Lys Asp Val Tyr Ile Val Gln Asp Leu Met Glu Thr Asp Leu Tyr Lys
                               105
           100
Leu Leu Lys Thr Gln His Leu Ser Asn Asp His Ile Cys Tyr Phe Leu
                           120
                                              125
        115
Tyr Gln Ile Leu Arg Gly Leu Lys Tyr Ile His Ser Ala Asn Val Leu
                      135
                                           140
His Arg Asp Leu Lys Pro Ser Asn Leu Leu Leu Asn Thr Thr Cys Asp
                                       155
                   150
Leu Lys Ile Cys Asp Phe Gly Leu Ala Arg Val Ala Asp Pro Asp His
                                   170
               165
Asp His Thr Gly Phe Leu Thr Glu Tyr Val Ala Thr Arg Trp Tyr Arg
                              185
           180
Ala Pro Glu Ile Met Leu Asn Ser Lys Gly Tyr Thr Lys Ser Ile Asp
                                      205
                          200
Ile Trp Ser Val Gly Cys Ile Leu Ala Glu Met Leu Ser Asn Arg Pro
            215
Ile Phe Pro Gly Lys His Tyr Leu Asp Gln Leu Asn His Ile Leu Gly
                                       235
225 -
                  230
Ile Leu Gly Ser Pro Ser Gln Glu Asp Leu Asn Cys Ile Ile Asn Leu
                                   250
                245
Lys Ala Arg Asn Tyr Leu Leu Ser Leu Pro His Lys Asn Lys Val Pro
                                265
           260
Trp Asn Arg Leu Phe Pro Asn Ala Asp Ser Lys Ala Leu Asp Leu Leu
                                               285
                           280
Asp Lys Met Leu Thr Phe Asn Pro His Lys Arg Ile Glu Val Glu Gln
                                            300
                       295
Ala Leu Ala His Pro Tyr Leu Glu Gln Tyr Tyr Asp Pro Ser Asp Glu
                                       315
                    310
Pro Ile Ala Glu Ala Pro Phe Lys Phe Asp Met Glu Leu Asp Asp Leu
                                   330
               325
Pro Lys Glu Lys Leu Lys Glu Leu Ile Phe Glu Glu Thr Ala Arg Phe
                               345
Gln Pro Gly Tyr Arg Ser Met Asp Pro Pro Val Ala Thr Met Val Ser
                            360
        355
Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu Leu
                        375
                                            380
 Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly Glu
                                        395
                    390
 Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr Thr
                                    410
                                                        415
                405
 Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu Thr Tyr
                                425
 Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln His Asp
                            440
        435
 Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg Thr Ile
                                            460
                        455
 Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val Lys Phe
                                        475
                   470
 Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile Asp Phe
                485
                                    490
 Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn Tyr Asn
```

Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly Ile Lys 515 520 525 Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val Gln Leu 535 540 Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro Val Leu 550 555 Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser Lys Asp 565 570 Pro Asn Glu Lys Arg Asp His Met Val Leu Glu Phe Val Thr Ala 585 Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys 600 <210> 60 2511 <211> <212> DNA <213> Artificial Sequence <220> <223> Grk5-EGFP fusion <220> <221> CDS <222> (1)..(2508) <400> 60 atg gag ctg gaa aac atc gtg gcc aac acg gtc ttg ctg aaa gcc agg 48 Met Glu Leu Glu Asn Ile Val Ala Asn Thr Val Leu Leu Lys Ala Arg 5 10 96 Glu Gly Gly Gly Lys Arg Lys Gly Lys Ser Lys Lys Trp Lys Glu 25 atc ctg aag ttc cct cac att agc cag tgt gaa gac ctc cga agg acc 144 Ile Leu Lys Phe Pro His Ile Ser Gln Cys Glu Asp Leu Arg Arg Thr 40 35 ata qac aga gat tac tgc agt tta tgt gac aag cag cca atc ggg agg 192 Ile Asp Arg Asp Tyr Cys Ser Leu Cys Asp Lys Gln Pro Ile Gly Arg 60 55 240 ctg ctt ttc cgg cag ttt tgt gaa acc agg cct ggg ctg gag tgt tac Leu Leu Phe Arg Gln Phe Cys Glu Thr Arg Pro Gly Leu Glu Cys Tyr 75 att cag ttc ctg gac tcc gtg gca gaa tat gaa gtt act cca gat gaa 288 Ile Gln Phe Leu Asp Ser Val Ala Glu Tyr Glu Val Thr Pro Asp Glu 90 8.5 aaa ctg gga gag aaa ggg aag gaa att atg acc aag tac ctc acc cca 336 Lys Leu Gly Glu Lys Gly Lys Glu Ile Met Thr Lys Tyr Leu Thr Pro 105 1.00 aag too cot gtt tto ata goo caa gtt ggo caa gao ctg gto too cag 384 Lys Ser Pro Val Phe Ile Ala Gln Val Gly Gln Asp Leu Val Ser Gln 120 125 115 acg gag gag aag ctc cta cag aag ccg tgc aaa gaa ctc ttt tct gcc 432

Thr Glu Glu Lys Leu Leu Gln Lys Pro Cys Lys Glu Leu Phe Ser Ala

| | 130 | | | | | 135 | | | | | 140 | | | | | |
|-----|----------|------|-------|--------|-------|------|-------|------|------|-----|------|-----|------|-------|------|-------|
| tat | gca | cad | tct | atc | cac | | tac | cta | ann | aaa | | cca | ttc | cac | raa. | 480 |
| | Ala | | | | | | | | | | | | | | | 400 |
| _ | Ата | GIII | Ser | vaı | 150 | Giu | тут | ьеu | ALG | 155 | Giu | FIO | File | 1113 | 160 | |
| 145 | | | | a + a- | | | ~~~ | ~~~ | | | ~~~ | | | + | | E 2 0 |
| | ctg | _ | _ | _ | | | _ | _ | | | _ | | - | | _ | 528 |
| Tyr | Leu | Asp | Ser | | Phe | Phe | Asp | Arg | | Leu | GIn | Trp | Lys | - | Leu | |
| | | | | 165 | | | | | 170 | | | | | 175 | | |
| _ | agg | | _ | | | | | | | | - | | _ | | | 576 |
| Glu | Arg | Gln | Pro | Val | Thr | Lys | Asn | Thr | Phe | Arg | Gln | Tyr | Arg | Val | Leu | |
| | | | 180 | | | | | 185 | | | | | 190 | | | |
| gga | aaa | ggg | ggc | ttc | ggg | gag | gtc | tgt | gcc | tgc | cag | gtt | cgg | gcc | acg | 624 |
| Gly | Lys | Gly | Gly | Phe | Gly | Glu | Val | Cys | Ala | Cys | Gln | Val | Arg | Ala | Thr | |
| | | 195 | | | | | 200 | - | | _ | | 205 | _ | | | |
| aat | aaa | atq | tat | acc | tac | aaσ | cac | tta | gag | aaq | aaσ | agg | atc | aaa | aaσ | 672 |
| | Lys | | | | | | | | | | | | | | | |
| 2 | 210 | | - 4 - | | - 2 | 215 | 3 | | | | 220 | 5 | | | | |
| ann | aaa | aaa | σασ | tcc | ato | | ctc | aat | naπ | ааσ | | atc | ctc | nan | aad | 720 |
| | Lys | | | | | | | | | | | | | | | ,20 |
| 225 | цуз | GLY | Giu | Ser | 230 | AIG | пец | ASII | GIU | 235 | GIII | 116 | пец | GIU | 240 | |
| | | | | | | | | | | | | | | | | 7.00 |
| | aac | | | | | | | | | | | | | | | 768 |
| vaı | Asn | ser | GIN | | vaı | vaı | Asn | ьeu | | Tyr | Ата | Tyr | GIU | | гÀг | |
| | | | | 245 | | | | | 250 | | | | | 255 | | |
| | gca | | | | | | | | | | | | | | | 816 |
| Asp | Ala | Leu | Cys | Leu | Val | Leu | Thr | Ile | Met | Asn | Gly | Gly | Asp | Leu | Lys | |
| | | | 260 | | | | | 265 | | | | | 270 | | | |
| ttc | cac | atc | tac | aac | atg | ggc | aac | cct | ggc | ttc | gag | gag | gag | cgg | gcc | 864 |
| Phe | His | Ile | Tyr | Asn | Met | Gly | Asn | Pro | Gly | Phe | Glu | Glu | Glu | Arg | Ala | |
| | | 275 | | | | | 280 | | | | | 285 | | | | |
| ttg | ttt | tat | qcq | qca | gag | atc | ctc | tgc | qqc | tta | gaa | gac | ctc | cac | cgt | 912 |
| | Phe | | | | | | | | | | | | | | | |
| | 290 | 2 | | | | 295 | | | | | 300 | * | | | , | |
| ααα | aac | acc | atc | tac | саа | gat. | cta | aaa | cct | αаа | aac | atc | cta | t.t.a | αat. | 960 |
| | Asn | | | | | | | | | | | | | | | |
| 305 | 11011 | | · 41 | - 7 - | 310 | 1100 | шеа | _, | | 315 | | | LCu | LCu | 320 | |
| | tat | aac | Cac | 2++ | - | atc | + == | asc. | cta | - | ++~ | act | ata | 220 | | 1008 |
| _ | Tyr | | | | | | | - | _ | | _ | - | | _ | | 1000 |
| Азр | тут | СТУ | птэ | 325 | ALG | TTC | Ser | АЗР | 330 | GLY | пец | Ата | Val | 335 | 116 | |
| | ~~~ | ~~~ | ~~~ | | a + a | ~~~ | ~~~ | ~~~ | | ~~~ | t | ~++ | ~~~ | | -+- | 1056 |
| | gag | | | | | | | | | | | | | | | 1056 |
| Pro | Glu | GTA | _ | Leu | тте | Arg | GLY | _ | vai | GIY | Thr | vai | | Tyr | мет | |
| | | | 340 | | | | | 345 | | | | | 350 | | | |
| _ | CCC | _ | _ | _ | | | _ | | | | _ | _ | | - | | 1104 |
| Ala | Pro | | Val | Leu | Asn | Asn | | Arg | Tyr | GLY | Leu | | Pro | Asp | Tyr | |
| | | 355 | | | | | 360 | | | | | 365 | | | | |
| | ggc | | | | | | | | | | | | | | | 1152 |
| Trp | Gly | Leu | Gly | Cys | Leu | Ile | Tyr | Glu | Met | Ile | Glu | Gly | Gln | Ser | Pro | |
| | 370 | | | | | 375 | | | | | 380 | | | | | |
| ttc | cgc | ggc | cgt | aag | gag | aag | gtg | aag | cgg | gag | gag | gtg | gac | cgc | cgg | 1200 |
| Phe | Arg | Gly | Arg | Lys | Glu | Lys | Val | Lys | Arg | Glu | Glu | Val | Asp | Arg | Arq | |
| 385 | _ | _ | | - | 390 | | | | | 395 | | | | _ | 400 | |
| atc | ctg | gag | acq | gag | gag | ata | tac | tcc | cac | aaq | ttc | tcc | gag | gag | acc | 1248 |
| | Leu | | | | | | | | | | | | | | | |
| | | | | 405 | | | - 4 - | | 410 | | | | | 415 | | |
| aan | tcc | atc | tac | | ato | cta | ctc | aca | | gat | aca | aan | cad | | cta | 1296 |
| | Ser | | | | | | | | | | | | | | | 12,0 |
| цуз | DCI | 110 | 420 | дуЗ | 1100 | шец | DC u | 425 | LIYU | пор | 2114 | шуо | 430 | 1119 | пси | |
| | . | ~~~ | | ~~~ | ~~~ | ~~+ | ~~~ | | ~+~ | | | | | ++- | ++- | 1244 |
| | tgc | _ | | | | - | - | | - | _ | _ | | | | | 1344 |
| GLY | Cys | | GIU | GIU | GTA | Ala | | GIU | vaı | гÀг | Arg | | Pro | Pne | Pne | |
| | | 435 | | | | | 440 | | | | | 445 | | | | |
| | aac | _ | | | _ | _ | | _ | _ | | _ | _ | _ | | | 1392 |
| Arg | Asn | Met | Asn | Phe | Lys | _ | Leu | Glu | Ala | Gly | | Leu | Asp | Pro | Pro | |
| | 450 | | | | | 455 | | | | | 460 | | | | | |
| | gtt | | _ | | _ | _ | | | _ | _ | - | | _ | - | | 1440 |
| Phe | Val | Pro | Asp | Pro | Arg | Ala | Val | Tyr | Cys | Lys | Asp | Val | Leu | Asp | Ile | |
| | | | | | | | | | | | | | | | | |

en de la composition La composition de la

| 465 | | | | | 470 | | | | | 475 | | | | | 480 | |
|------|------|-------|------|-------|------------|-----|------|-----|-----|-------|--------|------------------|------|-------|------------|-------|
| | car | ttc | tcc | act | gtg | aan | aac | atc | aat | | aac | Cac | 202 | a a c | | 1488 |
| Glu | Gln | Phe | Ser | Thr | Val | Lvs | Glv | Val | Asn | Len | Asn | His | Thr | Aen | yac Aen | 1400 |
| 014 | 0111 | 2 110 | 001 | 485 | var | Lys | O_y | var | 490 | пси | пор | 1113 | 1111 | 495 | АЗР | |
| gac | ttc | tac | tcc | | ttc | tcc | аса | aac | | ata | tcc | atc | CCa | | Caa | 1536 |
| Asp | Phe | Tvr | Ser | Lvs | Phe | Ser | Thr | Glv | Ser | Val | Ser | Tle | Pro | Trn | Gln | 1330 |
| | | - 1 - | 500 | _,_ | | 501 | | 505 | 001 | , a _ | 501 | 110 | 510 | тър | 0.111 | |
| aac | gag | ato | | gaa | aca | gaa | tac | | aad | αaα | cta | aac | | +++ | aga | 1584 |
| | | | | | Thr | | | | | | | | | | | 1304 |
| | | 515 | | | | | 520 | | -1- | | | 525 | | | CTY | |
| cct | aat | aat | acc | ctc | ccg | cca | | cta | aac | aga | aac | | cct | cca | αаа | 1632 |
| | | | | | Pro | | | | | | | | | | | 1002 |
| | 530 | - | | | | 535 | | | | 9 | 540 | | | | 01.0 | |
| ccq | ccc | aaq | aaa | aaa | ctg | ctc | caq | aga | ctc | ttc | aaσ | caa | caq | cat | cad | 1680 |
| | | | | | Leu | | | | | | | | | | | |
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| aac | aat | tcc | aag | agt | tcg | ccc | aqc | tcc | aaq | acc | agt | ttt | aac | cac | | 1728 |
| Asn | Asn | Ser | Lys | Ser | Ser | Pro | Ser | Ser | Lvs | Thr | Ser | Phe | Asn | His | His | |
| | | | _ | 565 | | | | | 570 | | | | | 575 | | |
| ata | aac | tca | aac | cat | gtc | agc | tcg | aac | tcc | acc | gga | agc | agc | agg | gat | 1776 |
| Ile | Asn | Ser | Asn | His | Val | Ser | Ser | Asn | Ser | Thr | Ğĺy | Ser | Ser | Arg | Asp | |
| | | | 580 | | | | | 585 | | | - | | 590 | _ | - | |
| cca | ccg | gtc | gcc | acc | atg | gtg | agc | aag | ggc | gag | gag | ctg | ttc | acc | aaa | 1824 |
| Pro | Pro | Val | Ala | Thr | Met | Val | Ser | Lys | Gly | Glu | Glu | Leu | Phe | Thr | Gly | |
| | | 595 | | | | | 600 | | | | | 605 | | | - | |
| gtg | gtg | ccc | atc | ctg | gtc | gag | ctg | gac | ggc | gac | gta | aac | ggc | cac | aag | 1872 |
| Val | Val | Pro | Ile | Leu | Val | Glu | Leu | Asp | Gly | Asp | Val | Asn | Gly | His | Lys | |
| | 610 | | | | | 615 | | | | | 620 | | | | | |
| ttc | agc | gtg | tcc | ggc | gag | ggc | gag | ggc | gat | gcc | acc | tac | ggc | aag | ctg | 1920 |
| Phe | Ser | Val | Ser | Gly | Glu | Gly | Glu | Gly | Asp | Ala | Thr | Tyr | Gly | Lys | Leu | |
| 625 | | | | | 630 | | | | | 635 | | | | | 640 | |
| acc | ctg | aag | ttc | atc | tgc | acc | acc | ggc | aag | ctg | ccc | gtg | ccc | tgg | ccc | 1968 |
| Thr | Leu | Lys | Phe | | Cys | Thr | Thr | Gly | Lys | Leu | Pro | Val | Pro | Trp | Pro | |
| | | | | 645 | | | | | 650 | | | | | 655 | | |
| | | | | | ctg | | | | | | | | | | | 2016 |
| Thr | Leu | Val | | Thr | Leu | Thr | Tyr | | Val | Gln | Cys | Phe | | Arg | Tyr | |
| | | | 660 | | | | | 665 | | | | | 670 | | | |
| ccc | gac | cac | atg | aag | cag | cac | gac | ttc | ttc | aag | tcc | gcc | atg | CCC | gaa | 2064 |
| Pro | Asp | | мет | ьуs | Gln | HIS | | Phe | Phe | гàг | Ser | | Met | Pro | Glu | |
| ~~~ | | 675 | | | | | 680 | | | | | 685 | | | | |
| | | | | | cgc | | | | | | | | | | | 2112 |
| СТУ | 690 | vaı | GIII | GIU | Arg | | TTE | Pne | Pne | гÀг | | Asp | GLŸ | Asn | Tyr | |
| 220 | | ~~~ | ~~~ | ~~~ | ~+ ~ | 695 | ++- | ~~~ | ~~~ | ~~~ | 700 | | | | | 01.60 |
| T.ve | Thr | Ara | Ala | Glu | gtg Val | Tue | Pho | Glu | Clu | yac | mb ~ | Tou | gra | aac | cgc | 2160 |
| 705 | 1111 | ALG | Ата | GIU | 710 | цуз | FIIE | GIU | СТУ | 715 | TIIL | reu | vaı | ASII | | |
| | gag | cta | aad | aac | atc | aec | ttc | 220 | aaa | _ | aac | 226 | ato | ata | 720 | 2200 |
| | | | | | Ile | | | | | | | | | | | 2208 |
| 110 | Ora | пса | цуз | 725 | 116 | пор | 1116 | цуз | 730 | лэр | СТУ | ASII | 116 | 735 | Gry | |
| cac | aad | cta | σασ | | aac | tac | aac | agc | | 220 | ata | tat | ato | | acc | 2256 |
| | | | | | Asn | | | | | | | | | | | 2250 |
| | -1- | | 740 | - 1 - | | - 1 | | 745 | | | · u.i. | + y - | 750 | 1100 | 1114 | |
| gac | aaσ | caσ | aaσ | aac | ggc | atc | aaσ | | aac | ttc | aad | atc | | cac | aac | 2304 |
| Asp | Lvs | Gln | Lvs | Asn | Gly | Ile | Lvs | Val | Asn | Phe | Lvs | Tle | Ara | His | Asn | 2301 |
| • | - | 755 | - | | | | 760 | | | | -3- | 765 | 9 | | -1011 | |
| atc | qaq | qac | ggc | agc | gtg | caq | ctc | acc | gac | cac | tac | cag | caq | aac | acc | 2352 |
| | | | | | Val | | | | | | | | | | | |
| | 770 | - | - | | | 775 | | | • | | 780 | | | | _ | |
| ccc | atc | ggc | gac | ggc | ccc | gtg | ctg | ctg | ccc | gac | aac | cac | tac | ctq | agc | 2400 |
| | | | | | Pro | | | | | | | | | | | |
| 785 | | | | | 790 | | | | | 795 | | | _ | | 800 | |
| | | | | | agc | | | | | | | | | | | 2448 |
| Thr | Gln | Ser | Ala | Leu | Ser | Lys | Asp | Pro | Asn | Glu | Lys | Arg | Asp | His | Met | |

```
805
                                    810
gtc ctg ctg gag ttc gtg acc gcc gcc ggg atc act ctc ggc atg gac
                                                                    2496
Val Leu Leu Glu Phe Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp
            820
                                825
gag ctg tac aag taa
                                                                    2511
Glu Leu Tyr Lys
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       61
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<220>
<223> Grk5-EGFP fusion
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Glu Gly Gly Gly Lys Arg Lys Gly Lys Ser Lys Lys Trp Lys Glu
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Ile Leu Lys Phe Pro His Ile Ser Gln Cys Glu Asp Leu Arg Arg Thr
Ile Asp Arg Asp Tyr Cys Ser Leu Cys Asp Lys Gln Pro Ile Gly Arg
                       55
Leu Leu Phe Arg Gln Phe Cys Glu Thr Arg Pro Gly Leu Glu Cys Tyr
                                        75
Ile Gln Phe Leu Asp Ser Val Ala Glu Tyr Glu Val Thr Pro Asp Glu
Lys Leu Gly Glu Lys Gly Lys Glu Ile Met Thr Lys Tyr Leu Thr Pro
           100
                               105
Lys Ser Pro Val Phe Ile Ala Gln Val Gly Gln Asp Leu Val Ser Gln
       115
                           120
Thr Glu Glu Lys Leu Leu Gln Lys Pro Cys Lys Glu Leu Phe Ser Ala
                       135
                                    140
Cys Ala Gln Ser Val His Glu Tyr Leu Arg Gly Glu Pro Phe His Glu
                    150
                                       155
Tyr Leu Asp Ser Met Phe Phe Asp Arg Phe Leu Gln Trp Lys Trp Leu
               165
                                    170
                                                        175
Glu Arg Gln Pro Val Thr Lys Asn Thr Phe Arg Gln Tyr Arg Val Leu
                               185
Gly Lys Gly Gly Phe Gly Glu Val Cys Ala Cys Gln Val Arg Ala Thr
                           200
Gly Lys Met Tyr Ala Cys Lys Arg Leu Glu Lys Lys Arg Ile Lys Lys
                       215
                                            220
Arg Lys Gly Glu Ser Met Ala Leu Asn Glu Lys Gln Ile Leu Glu Lys
                   230
                                        235
Val Asn Ser Gln Phe Val Val Asn Leu Ala Tyr Ala Tyr Glu Thr Lys
               245
                                    250
                                                        255
Asp Ala Leu Cys Leu Val Leu Thr Ile Met Asn Gly Gly Asp Leu Lys
           260
                               265
Phe His Ile Tyr Asn Met Gly Asn Pro Gly Phe Glu Glu Glu Arg Ala
                           280
                                               285
Leu Phe Tyr Ala Ala Glu Ile Leu Cys Gly Leu Glu Asp Leu His Arg
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295

Glu Asn Thr Val Tyr Arg Asp Leu Lys Pro Glu Asn Ile Leu Leu Asp

```
305
                   310
                                      315
Asp Tyr Gly His Ile Arg Ile Ser Asp Leu Gly Leu Ala Val Lys Ile
                                 330
           325
Pro Glu Gly Asp Leu Ile Arg Gly Arg Val Gly Thr Val Gly Tyr Met
                               345
Ala Pro Glu Val Leu Asn Asn Gln Arg Tyr Gly Leu Ser Pro Asp Tyr
                           360
Trp Gly Leu Gly Cys Leu Ile Tyr Glu Met Ile Glu Gly Gln Ser Pro
                       375
                                          380
Phe Arg Gly Arg Lys Glu Lys Val Lys Arg Glu Glu Val Asp Arg Arg
                   390
                                      395
Val Leu Glu Thr Glu Glu Val Tyr Ser His Lys Phe Ser Glu Glu Ala
               405
                                  410
Lys Ser Ile Cys Lys Met Leu Leu Thr Lys Asp Ala Lys Gln Arg Leu
           420
                              425
Gly Cys Gln Glu Gly Ala Ala Glu Val Lys Arg His Pro Phe Phe
                          440
Arg Asn Met Asn Phe Lys Arg Leu Glu Ala Gly Met Leu Asp Pro Pro
                      455
Phe Val Pro Asp Pro Arg Ala Val Tyr Cys Lys Asp Val Leu Asp Ile
       470 475
Glu Gln Phe Ser Thr Val Lys Gly Val Asn Leu Asp His Thr Asp Asp
              485
                                  490
Asp Phe Tyr Ser Lys Phe Ser Thr Gly Ser Val Ser Ile Pro Trp Gln
    500
                  505
Asn Glu Met Ile Glu Thr Glu Cys Phe Lys Glu Leu Asn Val Phe Gly
                          520
Pro Asn Gly Thr Leu Pro Pro Asp Leu Asn Arg Asn His Pro Pro Glu
                      535
Pro Pro Lys Lys Gly Leu Leu Gln Arg Leu Phe Lys Arg Gln His Gln
                   550
                                      555
Asn Asn Ser Lys Ser Ser Pro Ser Ser Lys Thr Ser Phe Asn His His
               565
                                  570
Ile Asn Ser Asn His Val Ser Ser Asn Ser Thr Gly Ser Ser Arg Asp
                              585
Pro Pro Val Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly
                          600
                                             605
Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly His Lys
                      615
                                          620
Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu
                   630
                                      635
Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro
              645
                                  650
Thr Leu Val Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr
                              665
Pro Asp His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu
                          680
       675
                                    685
Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr
                       695
                                          700
Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg
                   710
                                      715
Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly
               725
                                  730
His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala
                               745
Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn
                           760
                                             765
Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr
                      775
                                          780
Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser
                   790
                                      795
Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met
               805
                                  810
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Glu Leu Tyr Lys
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       62
<211>
      1893
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       DNA
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      Jnk1-EGFP Fusion
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                                                                       48
Met Ser Arg Ser Lys Arg Asp Asn Asn Phe Tyr Ser Val Glu Ile Gly
                                    10
gat tot aca tto aca gto otg aaa oga tat cag aat tta aaa oot ata
                                                                       96
Asp Ser Thr Phe Thr Val Leu Lys Arg Tyr Gln Asn Leu Lys Pro Ile
                                25
ggc tca gga gct caa gga ata gta tgc gca gct tat gat gcc att ctt
                                                                      144
Gly Ser Gly Ala Gln Gly Ile Val Cys Ala Ala Tyr Asp Ala Ile Leu
                            40
                                                45
gaa aga aat gtt gca atc aag aag cta agc cga cca ttt cag aat cag
                                                                      192
Glu Arg Asn Val Ala Ile Lys Lys Leu Ser Arg Pro Phe Gln Asn Gln
                       5.5
                                            60
act cat gcc aag cgg gcc tac aga gag cta gtt ctt atg aaa tgt gtt
                                                                      240
Thr His Ala Lys Arg Ala Tyr Arg Glu Leu Val Leu Met Lys Cys Val
                    70
aat cac aaa aat ata att ggc ctt ttg aat gtt ttc aca cca cag aaa
                                                                      288
Asn His Lys Asn Ile Ile Gly Leu Leu Asn Val Phe Thr Pro Gln Lys
                                    90
tcc cta gaa gaa ttt caa gat gtt tac ata gtc atg gag ctc atg gat
                                                                      336
Ser Leu Glu Glu Phe Gln Asp Val Tyr Ile Val Met Glu Leu Met Asp
            100
                                105
gca aat ctt tgc caa gtg att cag atg gag cta gat cat gaa aga atg
                                                                      384
Ala Asn Leu Cys Gln Val Ile Gln Met Glu Leu Asp His Glu Arq Met
                            120
tcc tac ctt ctc tat cag atg ctg tgt gga atc aag cac ctt cat tct
                                                                      432
Ser Tyr Leu Leu Tyr Gln Met Leu Cys Gly Ile Lys His Leu His Ser
                        135
                                            140
gct gga att att cat cgg gac tta aag ccc agt aat ata gta gta aaa
                                                                      480
Ala Gly Ile Ile His Arg Asp Leu Lys Pro Ser Asn Ile Val Val Lys
                    150
                                        155
tet gat tge act ttg aag att ett gae tte ggt etg gee agg act gea
                                                                      528
Ser Asp Cys Thr Leu Lys Ile Leu Asp Phe Gly Leu Ala Arg Thr Ala
                165
                                    170
                                                        175
```

576

gga acg agt ttt atg atg acg cct tat gta gtg act cgc tac tac aga

| C1 | mb w | 000 | Dha | Mat | Mot | mb | Dma | m | 17-1 | tr 1 | mh | 7 | m | m | 70 | |
|-----|------------|------------|-----|------------|-----|------------|------------|-----|------------|------|------------|------------|------|------------|-----|------|
| - | | | 180 | | | Thr | | 185 | | | | _ | 190 | - | - | |
| | | | | | | ggc | | | | | | | | | | 624 |
| Ala | Pro | Glu 195 | Val | Ile | Leu | Gly | Met 200 | Gly | Tyr | Lys | Glu | Asn 205 | Val | Asp | Leu | |
| tgg | tct | gtg | ggg | tgc | att | atg | gga | gaa | atg | gtt | tgc | cac | aaa | atc | ctc | 672 |
| Trp | Ser 210 | Val | Gly | Cys | Ile | Met 215 | Gly | Glu | Met | Val | Cys 220 | His | Lys | Ile | Leu | |
| ttt | cca | gga | agg | gac | tat | att | gat | caq | tgg | aat | aaa | gtt | att | gaa | caq | 720 |
| | | | | | | Ile | | | | | | | | | | |
| ctt | gga | aca | cca | tgt | cct | gaa | ttc | atq | aaq | aaa | ctq | caa | сса | aca | qta | 768 |
| | | | | | | Glu | | | | | | | | | | |
| agg | act | tac | qtt | qaa | aac | aga | cct | aaa | tat | act | qqa | tat | agc | ttt | gag | 816 |
| | | | | | | Arg | | | | | | | | | | |
| aaa | ctc | ttc | | gat | atc | ctt | ttc | | act | gac | t.ca | σaa | | aac | aaa | 864 |
| | | | | _ | - | Leu | | | - | - | | _ | | | | |
| ctt | aaa | | agt | cag | αca | agg | | tta | tta | tcc | aaa | | cta | σta | ata | 912 |
| | | | | | | Arg | | | | | | | | | | |
| gat | | tct | aaa | agg | atc | tct | σta | gat | gaa | act. | | caa | cac | cca | tac | 960 |
| - | _ | | | | | Ser | _ | _ | _ | _ | | | | _ | | 200 |
| | aat | atc | taa | tat | | cct | tct | паа | aca | | act | cca | cca | cca | | 1008 |
| | | | | | | Pro | | | | | | | | | | 1000 |
| | | | | 325 | p | | 001 | 010 | 330 | 010 | | 110 | | 335 | טעב | |
| atc | cct | gac | aag | caq | tta | gat | gaa | agg | gaa | cac | aca | ata | gaa | gag | taa | 1056 |
| | | | | | | Asp | | | | | | | | | | |
| aaa | gaa | ttg | ata | tat | aag | gaa | gtt | atg | gac | ttg | gag | gag | aga | acc | aag | 1104 |
| Lys | Glu | Leu 355 | Ile | Tyr | Lys | Glu | Val 360 | Met | Asp | Leu | Glu | Glu 365 | Arg | Thr | Lys | |
| aat | gga | gtt | ata | cgg | ggg | cag | ccc | tct | cct | tta | gca | cag | gtg | cag | cag | 1152 |
| Asn | Gly 370 | Val | Ile | Arg | Gly | Gln 375 | Pro | Ser | Pro | Leu | Ala 380 | Gln | Val | Gln | Gln | |
| tgg | gat | cca | ccg | gtc | gcc | acc | atg | gtg | agc | aag | ggc | gag | gag | ctg | ttc | 1200 |
| Trp | Asp | Pro | Pro | Val | Ala | Thr | Met | Val | Ser | Lys | Gly | Glu | Glu | Leu | Phe | |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 | |
| | | | | | | ctg | - | | - | - | | _ | _ | | | 1248 |
| Thr | Gly | Val | Val | Pro 405 | Ile | Leu | Val | Glu | Leu 410 | Asp | Gly | Asp | Val | Asn 415 | Gly | |
| cac | aag | ttc | agc | | tcc | ggc | gag | aac | | qqc | gat | qcc | acc | | aac | 1296 |
| | _ | | _ | | | ĞÎy | | | | | - | _ | | | | |
| aaq | cta | acc | cta | aaq | ttc | atc | tac | acc | acc | aac | aaq | cta | ccc | ata | ccc | 1344 |
| _ | _ | | _ | - | | Ile | _ | | | | _ | _ | | | | |
| taa | ccc | | ctc | ata | acc | acc | | acc | tac | aac | ata | | tac | ttc | agc | 1392 |
| | | | | | | Thr 455 | _ | | | | | _ | _ | | _ | |
| cac | | ccc | gac | cac | atα | aag | caσ | cac | gac | ttc | | aaσ | t.cc | acc | atα | 1440 |
| | | | | | | Lys | | | | | | | | | | |
| | gaa | gac | tac | atc | | gag | cac | acc | atc | | ttc | aaσ | gac | gac | | 1488 |
| | - | | | _ | _ | Glu | _ | | | | | _ | - | - | | |
| aac | tac | aaq | acc | | gcc | gag | gta | aaq | | gag | gac | gac | acc | | gta | 1536 |
| | | - | | - | _ | Glu | | - | | | | - | | _ | | |
| aac | cgc | atc | | ctg | aag | ggc | atc | | ttc | aag | gag | gac | | aac | atc | 1584 |

```
Asn Arg Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile
        515
                           520
                                  525
ctg ggg cac aag ctg gag tac aac tac aac agc cac aac gtc tat atc
                                                                    1632
Leu Gly His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile
                       535
                                           540
atg gcc gac aag cag aag aac ggc atc aag gtg aac ttc aag atc cgc
                                                                    1680
Met Ala Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg
                   550
                                       555
cac aac atc gag gac ggc agc gtg cag ctc gcc gac cac tac cag cag
                                                                    1728
His Asn Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln
               565
                                   570
aac acc ccc atc ggc gac ggc ccc gtg ctg ctg ccc gac aac cac tac
                                                                    1776
Asn Thr Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr
                               585
ctg age ace cag tee gee etg age aaa gae eee aac gag aag ege gat
                                                                    1824
Leu Ser Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp
                           600
                                              605
cac atg gtc ctg ctg gag ttc gtg acc gcc gcc ggg atc act ctc ggc
                                                                    1872
His Met Val Leu Leu Glu Phe Val Thr Ala Ala Gly Ile Thr Leu Gly
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atg gac gag ctg tac aag taa
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Met Asp Glu Leu Tyr Lys
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<211> 630

<212> PRT

<213> Artificial Sequence

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<223> Jnk1-EGFP Fusion

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Gly Thr Ser Phe Met Met Thr Pro Tyr Val Val Thr Arg Tyr Tyr Arg
                   185
                                    190
Ala Pro Glu Val Ile Leu Gly Met Gly Tyr Lys Glu Asn Val Asp Leu
       195
                          200
Trp Ser Val Gly Cys Ile Met Gly Glu Met Val Cys His Lys Ile Leu
                      215
                                         220
Phe Pro Gly Arg Asp Tyr Ile Asp Gln Trp Asn Lys Val Ile Glu Gln
                 230
                                     235
Leu Gly Thr Pro Cys Pro Glu Phe Met Lys Lys Leu Gln Pro Thr Val
              245
                                 250
Arg Thr Tyr Val Glu Asn Arg Pro Lys Tyr Ala Gly Tyr Ser Phe Glu
                              265
                                                270
Lys Leu Phe Pro Asp Val Leu Phe Pro Ala Asp Ser Glu His Asn Lys
      275
                          280
Leu Lys Ala Ser Gln Ala Arg Asp Leu Leu Ser Lys Met Leu Val Ile
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                               300
Asp Ala Ser Lys Arg Ile Ser Val Asp Glu Ala Leu Gln His Pro Tyr
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                                     315
Ile Asn Val Trp Tyr Asp Pro Ser Glu Ala Glu Ala Pro Pro Pro Lys
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              325
Ile Pro Asp Lys Gln Leu Asp Glu Arg Glu His Thr Ile Glu Glu Trp
                              345
Lys Glu Leu Ile Tyr Lys Glu Val Met Asp Leu Glu Glu Arg Thr Lys
       355
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                                             365
Asn Gly Val Ile Arg Gly Gln Pro Ser Pro Leu Ala Gln Val Gln Gln
                      375
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Trp Asp Pro Pro Val Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe
                  390
                                     395
Thr Gly Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly
              405
                                 410
His Lys Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly
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                              425
Lys Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro
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Trp Pro Thr Leu Val Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser
                    455
                                         460
Arg Tyr Pro Asp His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met
                 470
                                    475
Pro Glu Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly
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Asn Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val
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Asn Arg Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile
                          520
                                            525
Leu Gly His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile
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                                         540
Met Ala Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg
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                  550
His Asn Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln
                                  570
Asn Thr Pro Ile Gly Asp Gly Pro Val Leu Pro Asp Asn His Tyr
          580
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Leu Ser Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp
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His Met Val Leu Leu Glu Phe Val Thr Ala Ala Gly Ile Thr Leu Gly
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                                         620
Met Asp Glu Leu Tyr Lys
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Met Ser Gln Glu Arg Pro Thr Phe Tyr Arg Gln Glu Leu Asn Lys Thr
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atc tgg gag gtg ccc gag cgt tac cag aac ctg tct cca gtg ggc tct
                                                                       96
Ile Trp Glu Val Pro Glu Arg Tyr Gln Asn Leu Ser Pro Val Gly Ser
ggc gcc tat ggc tct gtg tgt gct gct ttt gac aca aaa acg ggg tta
                                                                      144
Gly Ala Tyr Gly Ser Val Cys Ala Ala Phe Asp Thr Lys Thr Gly Leu
                            40
                                               45
cgt gtg gca gtg aag aag ctc tcc aga cca ttt cag tcc atc att cat
                                                                      192
Arg Val Ala Val Lys Lys Leu Ser Arg Pro Phe Gln Ser Ile Ile His
                        55
gcg aaa aga acc tac aga gaa ctg cgg tta ctt aaa cat atg aaa cat
                                                                      240
Ala Lys Arg Thr Tyr Arg Glu Leu Arg Leu Leu Lys His Met Lys His
                                        75
gaa aat gtg att ggt ctg ttg gac gtt ttt aca cct gca agg tct ctg
                                                                      288
Glu Asn Val Ile Gly Leu Leu Asp Val Phe Thr Pro Ala Arg Ser Leu
                8.5
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gag gaa ttc aat gat gtg tat ctg gtg acc cat ctc atg ggg gca gat
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Glu Glu Phe Asn Asp Val Tyr Leu Val Thr His Leu Met Gly Ala Asp
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                                                     110
ctg aac aac att gtg aaa tgt cag aag ctt aca gat gac cat gtt cag
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Leu Asn Asn Ile Val Lys Cys Gln Lys Leu Thr Asp Asp His Val Gln
                            120
ttc ctt atc tac caa att ctc cga ggt cta aag tat ata cat tca qct
                                                                      432
Phe Leu Ile Tyr Gln Ile Leu Arg Gly Leu Lys Tyr Ile His Ser Ala
                        135
                                            140
gac ata att cac agg gac cta aaa cct agt aat cta gct gtg aat gaa
                                                                      480
Asp Ile Ile His Arg Asp Leu Lys Pro Ser Asn Leu Ala Val Asn Glu
                    150
                                        155
gac tgt gag ctg aag att ctg gat ttt gga ctg gct cgg cac aca gat
                                                                      528
Asp Cys Glu Leu Lys Ile Leu Asp Phe Gly Leu Ala Arg His Thr Asp
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                                    170
gat gaa atg aca ggc tac gtg gcc act agg tgg tac agg gct cct gag
                                                                      576
Asp Glu Met Thr Gly Tyr Val Ala Thr Arg Trp Tyr Arg Ala Pro Glu
            180
                                185
atc atg ctg aac tgg atg cat tac aac cag aca gtt gat att tgg tca
                                                                      624
Ile Met Leu Asn Trp Met His Tyr Asn Gln Thr Val Asp Ile Trp Ser
                            200
                                                205
gtg gga tgc ata atg gcc gag ctg ttg act gga aga aca ttg ttt cct
                                                                      672
Val Gly Cys Ile Met Ala Glu Leu Leu Thr Gly Arg Thr Leu Phe Pro
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215

210

| ggt Gly 225 | aca Thr | gac Asp | cat His | att Ile | gat Asp 230 | cag Gln | ttg Leu | aag Lys | ctc Leu | att Ile 235 | tta Leu | aga Arg | ctc Leu | gtt Val | gga Gly 240 | 720 |
|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------|
| acc | cca Pro | ggg Gly | gct Ala | Glu | ctt | ttg Leu | aag Lys | aaa Lys | atc Ile 250 | tcc | tca Ser | gag Glu | tct Ser | gca Ala 255 | aga Arg | 768 |
| aac Asn | tat Tyr | att Ile | Gln | 245 tct Ser | ttg Leu | act Thr | cag Gln | atg Met 265 | ccg | aag Lys | atg Met | aac Asn | ttt Phe 270 | gcg | aat Asn | 816 |
| gta Val | ttt Phe | Ile | 260 ggt Gly | gcc Ala | aat Asn | ccc Pro | ctg Leu 280 | gct Ala | gtc Val | gac Asp | ttg Leu | ctg Leu 285 | gag | aag Lys | atg Met | 864 |
| ctt Leu | Val | 275 ttg Leu | gac Asp | tca Ser | gat Asp | aag Lys 295 | aga | att Ile | aca Thr | gcg Ala | gcc Ala 300 | caa | gcc Ala | ctt Leu | gca Ala | 912 |
| His | gcc Ala | tac Tyr | ttt Phe | gct Ala | cag Gln 310 | tac | cac His | gat Asp | cct Pro | gat Asp 315 | gat | gaa Glu | cca Pro | gtg Val | gcc Ala 320 | 960 |
| 305 gat Asp | cct Pro | tat Tyr | gat Asp | cag Gln 325 | tcc | ttt Phe | gaa Glu | agc Ser | agg Arg 330 | gac | ctc Leu | ctt Leu | ata Ile | gat Asp 335 | gag | 1008 |
| tgg Trp | aaa Lys | agc Ser | ctg Leu 340 | acc | tat Tyr | gat Asp | gaa Glu | gtc Val 345 | atc | agc Ser | ttt Phe | gtg Val | cca Pro 350 | cca | ccc Pro | 1056 |
| ctt Leu | gac Asp | caa Gln 355 | gaa | gag Glu | atg Met | gag Glu | tcc Ser 360 | gag Glu | gat Asp | cca Pro | ccg Pro | gtc Val 365 | gcc Ala | acc Thr | atg Met | 1104 |
| gtg Val | agc Ser 370 | aaq | ggc Gly | gag Glu | gag Glu | ctg Leu 375 | ttc | acc Thr | Gly | gtg Val | gtg Val 380 | ccc Pro | atc Ile | ctg Leu | gtc Val | 1152 |
| gag Glu 385 | ctq | gac Asp | ggc Gly | gac Asp | gta Val 390 | aac | ggc Gly | cac His | aag Lys | ttc Phe 395 | agc Ser | gtg Val | tcc Ser | ggc Gly | gag Glu 400 | 1200 |
| aac | gag Glu | ggc Gly | gat Asp | gcc Ala 405 | acc Thr | tac Tyr | ggc Gly | aag Lys | ctg Leu 410 | acc Thr | ctg Leu | aag Lys | ttc Phe | atc Ile 415 | tgc Cys | 1248 |
| acc Thr | acc Thr | ggc Gly | aag Lys 420 | ctg Leu | ccc Pro | gtg Val | ccc Pro | tgg Trp 425 | ccc Pro | acc Thr | ctc Leu | gtg Val | acc Thr 430 | acc Thr | ctg Leu | 1296 |
| acc Thr | tac Tyr | ggc Gly 435 | gtg Val | cag Gln | tgc Cys | ttc Phe | agc Ser 440 | cgc Arg | tac Tyr | ccc Pro | gac Asp | cac His 445 | atg Met | aag Lys | cag Gln | 1344 |
| His | Asp 450 | Phe | Phe | Lys | Ser | Ala 455 | Met | ccc Pro | Glu | Gly | Tyr 460 | Val | Gln | Glu | Arg | 1392 |
| Thr 465 | Ile | Phe | Phe | Lys | Asp 470 | Asp | Gly | aac Asn | Tyr | Lys 475 | Thr | Arg | Ala | Glu | Val 480 | 1440 |
| Lys | Phe | Glu | Gly | Asp 485 | Thr | Leu | Val | aac Asn | Arg 490 | Ile | Glu | Leu | Lys | Gly 495 | Ile | 1488 |
| Asp | Phe | Lys | Glu 500 | Asp | Gly | Asn | Ile | ctg Leu 505 | Gly | His | Lys | Leu | Glu 510 | Tyr | Asn | 1536 |
| Tyr | Asn | Ser 515 | His | Asn | Val | Tyr | Ile 520 | | Ala | Asp | Lys | Gln 525 | Lys | Asn | Gly | 1584 |
| Ile | Lys 530 | Val | Asn | Phe | Lys | Ile 535 | Arg | His | Asn | Ile | Glu 540 | Asp | Gly | Ser | | 1632 |
| cag Gln 545 | Leu | gcc Ala | gac Asp | cac His | tac Tyr 550 | Gln | cag Gln | aac Asn | acc Thr | Pro 555 | Ile | ggc | gac Asp | ggc | Pro 560 | 1680 |

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        gtg
        ctg
        ctg
        ccc
        gac
        aac
        cac
        tac
        ctg
        acc
        cag
        tcc
        gac
        1728

        Val
        Leu
        Leu
        Pro
        Asp
        Asp
        His
        Tyr
        Leu
        Ser
        Thr
        Gln
        Ser
        Ala
        Leu
        Ser
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<213> Artificial Sequence

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290
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                                       300
His Ala Tyr Phe Ala Gln Tyr His Asp Pro Asp Asp Glu Pro Val Ala
                 310
                                   315
Asp Pro Tyr Asp Gln Ser Phe Glu Ser Arg Asp Leu Leu Ile Asp Glu
              325
                                330
Trp Lys Ser Leu Thr Tyr Asp Glu Val Ile Ser Phe Val Pro Pro
          340
                            345
Leu Asp Gln Glu Glu Met Glu Ser Glu Asp Pro Pro Val Ala Thr Met
                         360
                                         365
Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val
                    375
                            380
Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu
                 390
                                   395
Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys
              405
                               410
Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu
          420 425 430
Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln
              440
His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg
                                      460
          455
Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val
                                 475
               470
Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile
                               490
                                                 495
              485
Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn
                            505
Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly
                        520
                                          525
Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val
        535
                                      540
Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro
                 550
                                   555
Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser
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                     570
Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val
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Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys
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<213> Artificial Sequence

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<223> p85alpha-EGFP fusion

<220>

<221> CDS

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| | | gct | | | | | | | | | | | | | | 48 |
| Met | Ser | Ala | Glu | Gly | Tyr | Gln | Tyr | Arg | | Leu | Tyr | Asp | Tyr | - | Lys | |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | | |
| | | gaa | | | | | | | | | | | | | | 96 |
| Glu | Arg | Glu | Glu | Asp | Ile | Asp | Leu | | Leu | Gly | Asp | Ile | | Thr | Val | |
| | | | 20 | | | | | 25 | | | | | 30 | | | |
| | | ggg | | | - | _ | | | | _ | _ | | _ | _ | - | 144 |
| Asn | Lys | Gly | Ser | Leu | Val | Ala | | Gly | Phe | Ser | Asp | _ | Gln | Glu | Ala | |
| | | 35 | | | | | 40 | | | | | 45 | | | | |
| | | gaa | | | | | | | | | | | | | | 192 |
| Arg | | Glu | Glu | Ile | Gly | | Leu | Asn | Gly | Tyr | | Glu | Thr | Thr | Gly | |
| | 50 | | | | | 55 | | | | | 60 | | | | | |
| | | ggg | | | | | | | | | | | | | | 240 |
| | Arg | Gly | Asp | Phe | | Gly | Thr | Tyr | Val | | Tyr | Ile | Gly | Arg | - | |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 | |
| | | tcg | | | | | _ | | | | | | | | | 288 |
| Lys | Ile | Ser | Pro | | Thr | Pro | Lys | Pro | _ | Pro | Pro | Arg | Pro | | Pro | |
| | | | | 85 | | | | | 90 | | | | | 95 | | |
| | | cca | | | | | | | | | | | | | | 336 |
| Val | Ala | Pro | _ | Ser | Ser | Lys | Thr | | Ala | Asp | Val | Glu | | Gln | Ala | |
| | | | 100 | | | | | 105 | | | | | 110 | | | |
| _ | | ctc | _ | _ | | - | | _ | | - | | | _ | | _ | 384 |
| Leu | Thr | Leu | Pro | Asp | Leu | Ala | | Gln | Phe | Ala | Pro | | Asp | He | Ala | |
| | | 115 | | | | | 120 | | | | | 125 | | | | 420 |
| | | ctt | | | | | | | | | | | | | | 432 |
| Pro | | Leu | Leu | тте | ьуs | | Val | GIU | Ата | шe | | ьуs | ьуѕ | GTA | Leu | |
| | 130 | | | | | 135 | | | | | 140 | | | | | 400 |
| _ | _ | tca | | | | | | _ | - | | - | | - | - | - | 480 |
| | Cys | Ser | Thr | Leu | - | Arg | Thr | GIn | ser | | Ser | Asn | Leu | Ата | | |
| 145 | | | | | 150 | | | | | 155 | | | | | 160 | E 2.0 |
| | - | cag | | | - | _ | - | | | | | - | _ | _ | _ | 528 |
| Leu | Arg | Gln | Leu | | Asp | Cys | Asp | Thr | | ser | vaı | Asp | Leu | | мет | |
| .+. | ~~+ | ~+~ | | 165 | ++~ | ~~+ | ~~~ | ~~+ | 170 | | ~~~ | +-+ | a+a | 175 | ~~~ | 576 |
| | _ | gtg Val | | - | - | _ | _ | - | | | | | | _ | _ | 376 |
| TIE | ASP | Val | 180 | vai | ьeu | Ата | ASP | 185 | FIIE | пур | ALG | ıyı | 190 | ьец | Asp | |
| ++= | 003 | aat | | at a | 2++ | CCa | ~~~ | | at t | tac | a or t | a a a | | a++ | tot | 624 |
| | | Asn | | - | | | - | - | - | | _ | - | _ | | | 024 |
| пец | LIO | 195 | LIO | vai | 116 | LIO | 200 | AIG | Val | TYL | Ser | 205 | Mec | 116 | 561 | |
| tta | act | cca | gaa | αta | caa | agc | | αaa | gaa | tat | att | | cta | tta | aad | 672 |
| | | Pro | | | | | | | | | | | | | | 0,2 |
| пса | 210 | 110 | Olu | val | 0111 | 215 | DCI | O.L.u | OLU | T Y T | 220 | 0111 | LCG | Leu | Lyb | |
| aad | | att | agg | tca | cct | | ata | cct | cat | cad | | taa | ctt | aca | ctt | 720 |
| _ | | Ile | | _ | | - | | | | _ | | | | _ | | , = 0 |
| 225 | | | 9 | | 230 | | | | | 235 | -1- | | | | 240 | |
| | tat | ttg | tta | aaa | | ttc | ttc | aaσ | ctc | | caa | acc | tcc | agc | | 768 |
| - | | Leu | | | | | | _ | | | | | | - | | |
| | | | | 245 | | | | | 250 | | | | | 255 | 4 | |
| aat | cta | ttg | aat | qca | aga | qta | ctc | tct | gaa | att | ttc | agc | cct | atq | ctt | 816 |
| | - | Leu | | - | _ | _ | | | _ | | | _ | | _ | | |
| | | | 260 | | _ | | | 265 | | | | | 270 | | | |
| ttc | aga | ttc | tca | gca | gcc | agc | tct | gat | aat | act | gaa | aac | ctc | ata | aaa | 864 |
| | | Phe | | | | | | | | | | | | | | |
| | - | 275 | | | | | 280 | - | | | | 285 | | | | |
| gtt | ata | gaa | att | tta | atc | tca | act | gaa | tgg | aat | gaa | cga | cag | cct | gca | 912 |
| Val | Ile | Glu | Ile | Leu | Ile | Ser | Thr | Glu | Trp | Asn | Glu | Arg | Gln | ${\tt Pro}$ | Ala | |
| | 290 | | | | | 295 | | | | | 300 | | | | | |
| | | ctg | | | | | | | | | | | | | | 960 |
| Pro | Ala | Leu | Pro | Pro | Lys | Pro | Pro | Lys | Pro | Thr | Thr | Val | Ala | Asn | Asn | |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 | |
| | | aat | | | | | | | | | | | | | | 1008 |
| Gly | Met | Asn | Asn | Asn | Met | Ser | Leu | Gln | Asn | Ala | Glu | Trp | Tyr | Trp | Gly | |

| | | | | 325 | | | | | 330 | | | | | 335 | | |
|-----|------------|------------|------------|-------|-----|------------|------------|------------|-----|-----|------------------|------------|-------------|-----|-----|-------|
| gat | atc | tcg | agg | gaa | gaa | gtg | aat | gaa | aaa | ctt | cga | gat | aca | gca | gac | 1056 |
| Asp | Ile | Ser | Arg 340 | Glu | Glu | Val | Asn | Glu 345 | Lys | Leu | Arg | Asp | Thr 350 | Ala | Asp | |
| ggg | acc | ttt | ttg | gta | cga | gat | gcg | tct | act | aaa | atg | cat | ggt | gat | tat | 1104 |
| Gly | Thr | Phe 355 | Leu | Val | Arg | Asp | Ala 360 | Ser | Thr | Lys | Met | His 365 | Gly | Asp | Tyr | |
| | | | | | | ggg | | | | | | | | | | 1152 |
| Thr | Leu 370 | Thr | Leu | Arg | Lys | Gly 375 | Gly | Asn | Asn | Lys | Leu 380 | Ile | Lys | Ile | Phe | |
| | | | | | | ggc | | | | | | | | | | 1200 |
| His | Arg | Asp | Gly | Lys | Tyr | Gly | Phe | Ser | Asp | Pro | Leu | Thr | Phe | Ser | Ser | |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 | |
| | - | _ | | | | cac | | | | _ | | | | _ | | 1248 |
| | | | | 405 | | His | - | - | 410 | | | | | 415 | _ | |
| | | | - | _ | | aaa | | | | | - | | | | | 1296 |
| Asn | Pro | Lys | Leu 420 | Asp | Val | Lys | Leu | Leu 425 | Tyr | Pro | Val | Ser | Lys 430 | Tyr | Gln | |
| _ | _ | | _ | _ | | gaa | _ | | | - | _ | - | | | | 1344 |
| | _ | 435 | | | _ | Glu | 440 | | | | | 445 | _ | _ | _ | |
| | | | | | | cag | | | | | | | | | | 1392 |
| | 450 | | - | | | Gln 455 | | | | _ | 460 | - | | - | _ | |
| | | | | | | acc | | | | | | | | | | 1440 |
| _ | Leu | Tyr | Glu | Glu | _ | Thr | Arg | Thr | Ser | | Glu | Ile | Gln | Met | - | |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 | |
| | | _ | | _ | - | ttt | | - | | | | | | - | - | 1488 |
| - | | | | 485 | | Phe | | | 490 | | - | | | 495 | | |
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| | | | | | | aaa | | | | | | | | | | 1584 |
| _ | - | 515 | - | | | Lys | 520 | | | - | | 525 | | | _ | 1.600 |
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| - | 530 | | _ | | - | 11e 535 | | | | | 540 | | • | _ | - | 1.600 |
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| 545 | | | _ | | 550 | Lys | | | | 555 | _ | _ | | | 560 | 1720 |
| | | | | | | aaa | | | | | | | | | | 1728 |
| - | _ | | | 565 | | Lys | | • | 570 | | | | - | 575 | | 1776 |
| - | - | | | - | _ | tgg | _ | | | | | - | | | _ | 1776 |
| , | - | | 580 | | | Trp | | 585 | | - | - | | 590 | | _ | 1004 |
| | | | | | | ggc | | | | | | | | | | 1824 |
| - | | 595 | | • | | Gly | 600 | | | | | 605 | | - | | 1070 |
| | | | | | | gat | | | | | | | | | | 1872 |
| | 610 | | • | • | | Asp 615 | | | | | 620 | | - | | _ | 1000 |
| | | | | | | cga | | | | | | | | | | 1920 |
| | val | GTÀ | ser | ser | | Arg | Asn | ьуs | Ата | | ASN | ьeu | ьeu | Arg | | |
| 625 | | ~ | ~~- | ^ ~ ± | 630 | ~++ | ~+ ~ | ~~- | ~~~ | 635 | - ~ - | | ~ ~~ | ~~- | 640 | 1000 |
| | | | | | | ctt Leu | | | | | | | | | | 1968 |
| - , | _ | | | 645 | | | | | 650 | | | | | 655 | | 2016 |
| | - | _ | | _ | | gtg | _ | | _ | | | | | | | 2016 |
| ıyr | Ата | суѕ | ser | vат | val | Val | Азр | стА | GIU | vaı | пуз | пта | СУБ | vaı | 116 | |

| | | | 660 | | | | | 665 | | | | | 670 | | | |
|-----|-----|------------|------------|------------|------------|-------|------------|----------------------------|------------|-------|-------|------------|------------|------|------------|-------|
| aac | aaa | aca | gca | act | aac | tat | aac | ttt | qcc | gag | ccc | tat | aac | ttg | tac | 2064 |
| Asn | Lys | Thr 675 | Ala | Thr | Gly | Tyr | Gly 680 | Phe | Ala | Glu | Pro | Tyr 685 | Asn | Leu | Tyr | |
| agc | tct | ctg | aaa | gaa | ctg | gtg | cta | cat | tac | caa | cac | acc | tcc | ctt | gtg | 2112 |
| | 690 | | Lys | | | 695 | | | | | 700 | | | | | 21.52 |
| cag | cac | aac | gac | tcc | ctc | aat | gtc | aca | cta | gcc | tac | cca | gta | tat | gca | 2160 |
| 705 | | | Asp | | 710 | | | | | 715 | | | | | 720 | 2200 |
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| | | | Arg | 725 | | | | | 730 | | | | | 735 | | 225.6 |
| gag | gag | ctg | ttc | acc | ggg | gtg | gtg | CCC | atc | ctg | gtc | gag | ctg | gac | ggc | 2256 |
| | | | Phe 740 | | | | | 745 | | | | | 750 | | | 2304 |
| gac | gta | aac | ggc | cac | aag | ttc | agc | gtg | tcc | ggc | gag | ggc | Glu | Glv | yac Asn | 2304 |
| | | 755 | ĞÎy | | | | 760 | | | | | 765 | | | | |
| gcc | acc | tac | ggc | aag | ctg | acc | ctg | aag | ttc | atc | tgc | acc | acc | ggc | aag | 2352 |
| | 770 | | Gly | | | 775 | | | | | 780 | | | | | 0.400 |
| ctg | ccc | gtg | ccc | tgg | ccc | acc | ctc | gtg | acc | acc | ctg | acc | tac | ggc | gtg | 2400 |
| | Pro | Val | Pro | Trp | | Thr | Leu | Val | Thr | 795 | ьeu | Thr | туr | СТУ | 800 | |
| 785 | | | agc | 000 | 790 | ccc | asc | cac | ato | | cad | cac | gac | ttc | | 2448 |
| cag | Cyc | Dhe | Ser | Ara | Tur | Pro | Asp | His | Met | Lvs | Gln | His | Asp | Phe | Phe | |
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| aag | tcc | gcc | atg | CCC | gaa | ggc | tac | gtc | cag | gag | cgc | acc | atc | Pho | TTC Phe | 2496 |
| | | | Met 820 | | | | | 825 | | | | | 830 | | | 2544 |
| aag | gac | gac | ggc Gly | aac | tac | aag | acc | cgc | gcc | gag | gtg | aag Lus | Phe | Glu | Glv | 2344 |
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| Asp | Gly | Asn | Ile | Leu | | His | Lys | Leu | Glu | Tyr | Asn | Tyr | Asn | Ser | ніs 880 | |
| 865 | | | | | 870 | ~~~ | 229 | cac | 220 | 875 | aac | atc | aag | ata | | 2688 |
| aac | gtc | Tur | atc Ile | atg Met | gcc Ala | Asp | Lvs | Gln | Lvs | Asn | Gly | Ile | Lys | Val | Asn | |
| | | | | 885 | | | | | 890 | | | | | 895 | | 0706 |
| ttc | aag | atc | cgc | cac | aac | atc | gag | gac | ggc | agc | gtg | cag | ctc | gcc | gac | 2736 |
| | | | Arg 900 | | | | | 905 | | | | | 910 | | | 0704 |
| cac | tac | cag | cag | aac | acc | ccc | atc | ggc | gac | ggc | ccc | gtg | ctg | ctg | CCC | 2784 |
| | _ | 915 | Gln | | | | 920 | | | | | 925 | | | | 2022 |
| gac | aac | cac | tac | ctg | agc | acc | cag | tcc | gcc | ctg | ago | aaa | gac Agn | Dro | aac | 2832 |
| | 930 | | | | | 935 | | | | | 940 | 1 | | | Asn | |
| qaq | aad | cac | gat | cac | atg | gtc | ctg | ctg | gag | , ttc | gtg | acc | gcc | gcc | ggg | 2880 |
| Ğlu | Lys | Arg | Asp | His | Met | Val | Leu | Leu | Glu | ı Phe | . Val | Thr | Ala | Ala | GLY | |
| 945 | | | | | 950 | | | | | 955 | | | | | 960 | 2913 |
| ato | act | cto | ggc Gly | atg | gac | gag | CTG | ι τας ι Τ ων | aag Twe | j taa | L | | | | | 2515 |
| 116 | rnr | теп | , сту | 965 | | , GIU | . neu | . туг | 970 | | | | | | | |

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<213> Artificial Sequence

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<223> p85alpha-EGFP fusion

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Val Val Glu Leu Ile Asn His Tyr Arg Asn Glu Ser Leu Ala Gln Tyr
                 410
           405
Asn Pro Lys Leu Asp Val Lys Leu Leu Tyr Pro Val Ser Lys Tyr Gln
                       425
         420
Gln Asp Gln Val Val Lys Glu Asp Asn Ile Glu Ala Val Gly Lys Lys
             440
Leu His Glu Tyr Asn Thr Gln Phe Gln Glu Lys Ser Arg Glu Tyr Asp
                                      460
                  455
Arg Leu Tyr Glu Glu Tyr Thr Arg Thr Ser Gln Glu Ile Gln Met Lys
                                  475
                 470
Arg Thr Ala Ile Glu Ala Phe Asn Glu Thr Ile Lys Ile Phe Glu Glu
                              490
             485
Gln Cys Gln Thr Gln Glu Arg Tyr Ser Lys Glu Tyr Ile Glu Lys Phe
                           505
Lys Arg Glu Gly Asn Glu Lys Glu Ile Gln Arg Ile Met His Asn Tyr
                                         525
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Asp Lys Leu Lys Ser Arg Ile Ser Glu Ile Ile Asp Ser Arg Arg Arg
                                     540
                    535
Leu Glu Glu Asp Leu Lys Lys Gln Ala Ala Glu Tyr Arg Glu Ile Asp
                        555
                550
Lys Arg Met Asn Ser Ile Lys Pro Asp Leu Ile Gln Leu Arg Lys Thr
                  570 575
            565
Arg Asp Gln Tyr Leu Met Trp Leu Thr Gln Lys Gly Val Arg Gln Lys
                  585 590
        580
Lys Leu Asn Glu Trp Leu Gly Asn Glu Asn Thr Glu Asp Gln Tyr Ser
      595 600
                                         605
Leu Val Glu Asp Asp Glu Asp Leu Pro His His Asp Glu Lys Thr Trp
                            620
                  615
Asn Val Gly Ser Ser Asn Arg Asn Lys Ala Glu Asn Leu Leu Arg Gly
                                  635
                 630
Lys Arg Asp Gly Thr Phe Leu Val Arg Glu Ser Ser Lys Gln Gly Cys
                              650
              645
Tyr Ala Cys Ser Val Val Val Asp Gly Glu Val Lys His Cys Val Ile
                           665
Asn Lys Thr Ala Thr Gly Tyr Gly Phe Ala Glu Pro Tyr Asn Leu Tyr
                        680
                                         685
Ser Ser Leu Lys Glu Leu Val Leu His Tyr Gln His Thr Ser Leu Val
                            700
                    695
Gln His Asn Asp Ser Leu Asn Val Thr Leu Ala Tyr Pro Val Tyr Ala
        710 715
Gln Gln Arg Arg Gln Asp Pro Pro Val Ala Thr Met Val Ser Lys Gly
              725 730
Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu Leu Asp Gly
          740
                            745
Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly Glu Asp
                                         765
                         760
       755
Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys
                                       780
                     775
 Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu Thr Tyr Gly Val
                                   795
                  790
Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln His Asp Phe Phe
                                                 815
                               810
              805
 Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe
                            825
          820
 Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu Gly
                        840
 Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu
                     855
                                      860
 Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn Tyr Asn Ser His
                 870 875
 Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly Ile Lys Val Asn
                                890
            885
 Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val Gln Leu Ala Asp
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910
                                905
            900
His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro Val Leu Leu Pro
                                              925
                           920
       915
Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn
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Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val Thr Ala Ala Gly
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Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys
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Met Gly Asn Ala Ala Ala Lys Lys Gly Ser Glu Gln Glu Ser Val
                                    10
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aaa gag ttc cta gcc aaa gcc aag gaa gat ttc ctg aaa aaa tgg gaa
                                                                       96
Lys Glu Phe Leu Ala Lys Ala Lys Glu Asp Phe Leu Lys Lys Trp Glu
                                                     30
                                 25
gac ccc tct cag aat aca gcc cag ttg gat cag ttt gat aga atc aag
                                                                      144
Asp Pro Ser Gln Asn Thr Ala Gln Leu Asp Gln Phe Asp Arg Ile Lys
                             40
acc ctt ggc acc ggc tcc ttt ggg cga gtg atg ctg gtg aag cac aag
                                                                      192
Thr Leu Gly Thr Gly Ser Phe Gly Arg Val Met Leu Val Lys His Lys
                                            60
                         55
                                                                      240
gag agt ggg aac cac tac gcc atg aag atc tta gac aag cag aag gtg
Glu Ser Gly Asn His Tyr Ala Met Lys Ile Leu Asp Lys Gln Lys Val
                                        75
                    70
                                                                      288
 gtg aag cta aag cag atc gag cac act ctg aat gag aag cgc atc ctg
 Val Lys Leu Lys Gln Ile Glu His Thr Leu Asn Glu Lys Arg Ile Leu
                                     90
                 85
 cag gcc gtc aac ttc ccg ttc ctg gtc aaa ctt gaa ttc tcc ttc aag
                                                                      336
 Gln Ala Val Asn Phe Pro Phe Leu Val Lys Leu Glu Phe Ser Phe Lys
                                 105
                                                                      384
 gac aac tca aac ctg tac atg gtc atg gag tat gta gct ggt ggc gag
 Asp Asn Ser Asn Leu Tyr Met Val Met Glu Tyr Val Ala Gly Gly Glu
                                                 125
         115
 atg ttc tcc cac cta cgg cgg att gga agg ttc agc gag ccc cat gcc
                                                                      432
 Met Phe Ser His Leu Arg Arg Ile Gly Arg Phe Ser Glu Pro His Ala
                        135
                                             140
 cgt ttc tac gcg gcg cag atc gtc ctg acc ttt gag tat ctg cac tcc
                                                                      480
```

Arg Phe Tyr Ala Ala Gln Ile Val Leu Thr Phe Glu Tyr Leu His Ser

| 145 | | | | | 150 | | | | | 155 | | | | | 160 | 500 |
|-------|------------|------------|-------|-------|-------|-------|-------|-------|-------|-------|---------|-------------|------------|--------|------------|------|
| ctq | qac | ctc | atc | tac | cgg | gac | ctg | aag | ccc | gag | aat | ctt | ctc | atc | gac | 528 |
| Leu | Ásp | Leu | Ile | Tyr | Arg | Asp | Leu | Lys | Pro | Glu | Asn | Leu | Leu | тте | Asp | |
| | | | | 165 | | | | | 170 | | | | | 1/3 | | |
| caq | caq | aac | tat | att | cag | gtg | aca | gac | ttc | ggt | ttt | gcc | aag | cgt | gtg | 576 |
| Gln | Gln | Ğĺv | Tyr | Ile | Gln | Val | Thr | Asp | Phe | Gly | Phe | Ala | Lys | Arg | Val | |
| | | | 180 | | | | | 185 | | | | | 190 | | | |
| aaa | aac | cat | act | taa | acc | ttg | tgt | ggg | acc | cct | gag | tac | ttg | gcc | ccc | 624 |
| Lvs | Glv | Ara | Thr | Tro | Thr | Leu | Cys | Gly | Thr | Pro | Glu | Tyr | Leu | Ala | Pro | |
| | 0-1 | 195 | | - | | | 200 | _ | | | | 205 | | | | |
| a a a | att | atc | cta | agc | aaa | aac | tac | aac | aaq | gct | gtg | gac | tgg | tgg | gct | 672 |
| Glu | Tla | Tle | Len | Ser | Lvs | Glv | Tvr | Asn | Lvs | Āla | Val | Asp | Trp | Trp | Ala | |
| Giu | 210 | 110 | пса | 001 | 2,7 | 215 | - 4 - | | - | | 220 | | | | | |
| ata | 210 | ata | ctc | atc | tac | | atα | act | act | aat | tac | cca | ccc | ttc | ttc | 720 |
| 7 | gya | ycc wal | Tou | Tlo | Tur | Glu | Met | Ala | Ala | Ğĺv | Tvr | Pro | Pro | Phe | Phe | |
| | Gry | vaı | цец | 116 | 230 | OIG | 1100 | | | 235 | - | | | | 240 | |
| 225 | | | + | a + a | | atc | + = + | nan | aaa | | atc | tct | ggg | aaσ | ata | 768 |
| gct | gac | cag | Doc | Tla | Cla | Tlo | Tur | Glu | Lvs | Tle | Val | Ser | Gly | Lvs | Val | |
| Ala | Asp | GIN | Pro | | GIII | 116 | тАт | GIU | 250 | 110 | • • • • | | 1 | 255 | | |
| | | | | 245 | | | | ~~~ | | 224 | ~ac | cta | cta | | aac | 816 |
| cgg | ttc | cca | tcc | cac | ttc | agc | 2 | gac | Tan | Tura | 7 an | Tou | ctg | Ara | Asn | |
| Arg | Phe | Pro | | His | Phe | Ser | Ser | Asp | Leu | гуз | ASP | пец | Leu 270 | Arg | ASII | |
| | | | 260 | | | | | 265 | | | | | | ~~~ | ~~~ | 864 |
| ctt | ctg | caa | gtg | gat | cta | acc | aag | cgc | ttt | gga | aac | CTC | aag | gac | 999 | 004 |
| Leu | Leu | Gln | Val | Asp | Leu | Thr | | Arg | Phe | GLy | Asn | Leu | Lys | Asp | GTÀ | |
| | | 275 | | | | | 280 | | | | | 285 | | | | 010 |
| gtc | aat | gac | atc | aag | aac | cac | aag | tgg | ttt | gcc | acg | act | gac | tgg | att | 912 |
| Val | Asn | Asp | Ile | Lys | Asn | His | Lys | Trp | Phe | Ala | Thr | Thr | Asp | Trp | lie | |
| | 290 | | | | | 295 | | | | | 300 | | | | | |
| acc | atc | tat | caq | aga | aag | gtg | gaa | gct | CCC | ttc | ata | cca | aag | ttt | aaa | 960 |
| Ala | Ile | Tvr | Gln | Arq | Lys | Val | Glu | Ala | Pro | Phe | Ile | Pro | Lys | Phe | Lys | |
| 305 | | | | | 310 | | | | | 315 | | | | | 320 | |
| aac | cct | aaa | gac | acσ | agt | aac | ttt | gac | gac | tat | gag | gag | gaa | gag | atc | 1008 |
| Glv | Pro | Glv | Asp | Thr | Ser | Asn | Phe | Āsp | Āsp | Tyr | Glu | Glu | Glu | Glu | Ile | |
| OLY | 110 | 013 | 1101 | 325 | | | | - | 330 | | | | | 335 | | |
| caa | atc | tcc | atc | aat | gag | aaq | tat | aac | aaq | qaq | ttt | act | gag | ttt | ggg | 1056 |
| 7.50 | ycc val | Sar | Tle | Asn | Glu | Lvs | Cvs | Ğĺv | Lvs | Ğlu | Phe | Thr | Glu | Phe | Gly | |
| AIG | ۷ат | JCI | 340 | 11011 | 0 | -1- | - 1 - | 345 | - | | | | 350 | | | |
| | ~~~ | 2+4 | 240 | 222 | aaa | gaa | gaa | | t.t.c | act | gga | att | gtc | cca | att | 1104 |
| Toge | 710 | Mot | Cor | Tare | Clv | Glu | Glu | Leu | Phe | Thr | Ğĺv | Val | Val | Pro | Ile | |
| Arg | АІа | 355 | | цуз | GLY | Oru | 360 | | | | - 4 | 365 | | | | |
| | | 333 | ++- | ant. | aac | a a t | | | aaa | caa | aaa | tto | tct | att | agt | 1152 |
| CLL | gu. | gaa | Tou | Jan | . 61. | Aen | Val | Asn | Glv | Gln | Lvs | Phe | Ser | Val | Ser | |
| ьeu | | | . ьеч | ASP | , сту | 375 | Val | 11011 | OL 1 | 0 | 380 | | | | | |
| | 370 | | | | | | 202 | tac | aaa | 222 | | | ctt | aaa | ttt | 1200 |
| gga | . gag | ggt | . gaa | ggu | . yac | gca | Th~ | Tur | Glu | T.175 | Len | Thr | Leu | Lvs | Phe | |
| | | GLY | , GIU | СТУ | | | 1111 | TYT | ОТУ | 395 | | | | -1- | 400 | |
| 385 | | | | | 390 | | + | ~++ | 000 | | | acc | ctt | ato | | 1248 |
| att | . tgc | act | act | ggg | , aag | Cta | Dec | . gcc | Dwa | mrr. | Dro | The | T.e.11 | Val | act Thr | |
| Ile | e Cys | Thr | Thr | | | Leu | Pro |) Val | 410 | 111 | FIC | , 1111 | . ncu | 415 | Thr | |
| | | | | 405 | | | | | 410 | | | | . ~ . + | | | 1296 |
| act | cto | act | tat | ggt | gtt | . caa | . tgc | : דננ | CCL | aya | . max | . D. | l yar | . Uii | atg | 1230 |
| Thr | Let | ı Thi | r Tyr | : G13 | / Val | . Gir | . Суз | Pne | Ser | Aro | туг | . PIC | 12C |) III. | Met | |
| | | | 420 |) | | | | 425 | | | | | 430 | | | 1344 |
| aaa | a cag | , cat | gac | ; ttt | t ttc | aag | agt | gcc | ato | ccc | gaa | ggi | tat | . gir | a cag | 1244 |
| Lys | s Glr | n His | s Asp | o Ph€ | e Phe | e Lys | Ser | : Ala | Met | Pro | o Glu | ı GL | y Tyr | · va. | l Gln | |
| _ | | 431 | วั | | | | 44(|) | | | | 44 |) | | | 1200 |
| gaa | a aga | act | t ata | a tti | t tac | aaa | ı gat | gac | gg: | , aac | c tac | c aa | g aca | cg. | t gct | 1392 |
| Gli | ı Aro | Th: | r Ile | e Phe | е Туі | c Lys | Asp | Asp | Gly | / Ası | туз | с Гу | s Thi | Ar | g Ala | |
| | 450 | ٦ | | | | 455 | 5 | | | | 460 |) | | | | / = |
| ตลส | a ata | - 22 | a tti | t qaa | a ggt | t gat | aco | c ctt | gt! | : aat | t aga | a at | c gag | y tt | a aaa | 1440 |
| راع | - yoʻ | T.v | s Phe | e Gli | u Gl | y Ásr | Th | r Leu | ı Va. | l Ası | n Ar | y I1 | e Glı | Le د | u гуѕ | |
| 16 | 5 | | | | 470 | 0 | | | | 47. | 5 | | | | 480 | |
| aa. | t ati | t da | + ++ | t aa | a gaa | a qat | z aa | a aac | at | t ct | t gga | a ca | c aaa | a at | g gaa | 1488 |
| 99 | . u.c. | - Ju | n Ph | e Tiv | s G]: | u Ası | G_1 | y Asr | n Il | e Le | u Gĺ | y Hi | s Ly | s Me | t Glu | |
| GI. | y 11' | c no | F | 1 | | 1 | | - | | | | | | | | |

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490
                485
tac aat tat aac tca cat aat gta tac atc atg gca gac aaa cca aag
                                                                    1536
Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Pro Lys
                                                  510
                            505
           500
aat ggc atc aaa gtt aac ttc aaa att aga cac aac att aaa gat gga
                                                                    1584
Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Lys Asp Gly
                                                525
                           520
age gtt caa tta gea gae eat tat caa caa aat aet eea att gge gat
                                                                    1632
Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp
                                            540
                       535
ggc cct gtc ctt tta cca gac aac cat tac ctg tcc acg caa tct gcc
                                                                    1680
Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala
                    550
ctt tcc aaa gat ccc aac gaa aag aga gat cac atg atc ctt ctt gag
                                                                    1728
Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Ile Leu Leu Glu
                                    570
                565
ttt gta aca gct gct ggg att aca cat ggc atg gat gaa cta tac aaa
                                                                    1776
Phe Val Thr Ala Ala Gly Ile Thr His Gly Met Asp Glu Leu Tyr Lys
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                                                    590
                                                                    1788
cct cag gag taa
Pro Gln Glu
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 Lys Glu Phe Leu Ala Lys Ala Lys Glu Asp Phe Leu Lys Lys Trp Glu
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             2.0
 Asp Pro Ser Gln Asn Thr Ala Gln Leu Asp Gln Phe Asp Arg Ile Lys
                             40
 Thr Leu Gly Thr Gly Ser Phe Gly Arg Val Met Leu Val Lys His Lys
                                             60
                         55
 Glu Ser Gly Asn His Tyr Ala Met Lys Ile Leu Asp Lys Gln Lys Val
                                         75
                     70
 Val Lys Leu Lys Gln Ile Glu His Thr Leu Asn Glu Lys Arg Ile Leu
                                     90
                 8.5
 Gln Ala Val Asn Phe Pro Phe Leu Val Lys Leu Glu Phe Ser Phe Lys
                                 105
             100
 Asp Asn Ser Asn Leu Tyr Met Val Met Glu Tyr Val Ala Gly Gly Glu
                                                 125
                             120
 Met Phe Ser His Leu Arg Arg Ile Gly Arg Phe Ser Glu Pro His Ala
                                             140
                         135
 Arg Phe Tyr Ala Ala Gln Ile Val Leu Thr Phe Glu Tyr Leu His Ser
                                        155
                     150
 Leu Asp Leu Ile Tyr Arg Asp Leu Lys Pro Glu Asn Leu Leu Ile Asp
                                   170
                 165
 Gln Gln Gly Tyr Ile Gln Val Thr Asp Phe Gly Phe Ala Lys Arg Val
                                 185
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Lys Gly Arg Thr Trp Thr Leu Cys Gly Thr Pro Glu Tyr Leu Ala Pro
                        200
Glu Ile Ile Leu Ser Lys Gly Tyr Asn Lys Ala Val Asp Trp Trp Ala
                    215
Leu Gly Val Leu Ile Tyr Glu Met Ala Ala Gly Tyr Pro Pro Phe Phe
              230 235
Ala Asp Gln Pro Ile Gln Ile Tyr Glu Lys Ile Val Ser Gly Lys Val
                  250
          245
Arg Phe Pro Ser His Phe Ser Ser Asp Leu Lys Asp Leu Leu Arg Asn
              265
Leu Leu Gln Val Asp Leu Thr Lys Arg Phe Gly Asn Leu Lys Asp Gly
                                        285
    275 280
Val Asn Asp Ile Lys Asn His Lys Trp Phe Ala Thr Thr Asp Trp Ile
                    295
Ala Ile Tyr Gln Arg Lys Val Glu Ala Pro Phe Ile Pro Lys Phe Lys
                                  315
                 310
Gly Pro Gly Asp Thr Ser Asn Phe Asp Asp Tyr Glu Glu Glu Glu Ile
                              330
              325
Arg Val Ser Ile Asn Glu Lys Cys Gly Lys Glu Phe Thr Glu Phe Gly
                                             350
                           345
Arg Ala Met Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile
                                         365
                        360
Leu Val Glu Leu Asp Gly Asp Val Asn Gly Gln Lys Phe Ser Val Ser
                             380
                     375
Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe
                               395
                 390
Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr
                      410
             405
Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met
                                          430
                  425
Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln
                                         445
                        440
       435
 Glu Arg Thr Ile Phe Tyr Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala
                                    460
                    455
 Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys
                                   475
                 470
 Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Met Glu
                                                495
                            490
              485
 Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Pro Lys
                          505
           500
 Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Lys Asp Gly
                   520 525
       515
 Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp
                              540
           535
 Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala
                         555
 545 550
 Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Ile Leu Leu Glu
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 Phe Val Thr Ala Ala Gly Ile Thr His Gly Met Asp Glu Leu Tyr Lys
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 Pro Gln Glu
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PKB-EGFP fusion
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Met Ser Asp Val Ala Ile Val Lys Glu Gly Trp Leu His Lys Arg Gly
                                    10
gag tac atc aag acc tgg cgg cca cgc tac ttc ctc ctc aag aat gat
                                                                       96
Glu Tyr Ile Lys Thr Trp Arg Pro Arg Tyr Phe Leu Leu Lys Asn Asp
                                25
            2.0
ggc acc ttc att ggc tac aag gag cgg ccg cag gat gtg gac caa cgt
                                                                      144
Gly Thr Phe Ile Gly Tyr Lys Glu Arg Pro Gln Asp Val Asp Gln Arg
                                                45
                            40
gag get eec etc aac aac tte tet gtg geg eag tge eag etg atg aag
                                                                      192
Glu Ala Pro Leu Asn Asn Phe Ser Val Ala Gln Cys Gln Leu Met Lys
                        55
acg gag cgg ccc cgg ccc aac acc ttc atc atc cgc tgc ctg cag tgg
                                                                      240
Thr Glu Arg Pro Arg Pro Asn Thr Phe Ile Ile Arg Cys Leu Gln Trp
acc act gtc atc gaa cgc acc ttc cat gtg gag act cct gag gag cgg
                                                                      288
Thr Thr Val Ile Glu Arg Thr Phe His Val Glu Thr Pro Glu Glu Arg
                8.5
gag gag tgg aca acc gcc atc cag act gtg gct gac ggc ctc aag aag
                                                                       336
Glu Glu Trp Thr Thr Ala Ile Gln Thr Val Ala Asp Gly Leu Lys Lys
                                105
                                                     110
                                                                       384
caq gag gag gag atg gac ttc cgg tcg ggc tca ccc agt gac aac
Gln Glu Glu Glu Met Asp Phe Arg Ser Gly Ser Pro Ser Asp Asn
                                                 125
                             120
 tca ggg gct gaa gag atg gag gtg tcc ctg gcc aag ccc aag cac cgc
                                                                       432
 Ser Gly Ala Glu Glu Met Glu Val Ser Leu Ala Lys Pro Lys His Arg
                                             140
                         135
 gtg acc atg aac gag ttt gag tac ctg aag ctg ctg ggc aag ggc act
                                                                       480
 Val Thr Met Asn Glu Phe Glu Tyr Leu Lys Leu Leu Gly Lys Gly Thr
                                         155
                     150
 ttc ggc aag gtg atc ctg gtg aag gag aag gcc aca ggc cgc tac tac
                                                                       528
 Phe Gly Lys Val Ile Leu Val Lys Glu Lys Ala Thr Gly Arg Tyr Tyr
                                     170
                 165
 gcc atg aag atc ctc aag aag gaa gtc atc gtg gcc aag gac gag gtg
                                                                       576
 Ala Met Lys Ile Leu Lys Lys Glu Val Ile Val Ala Lys Asp Glu Val
                                                     190
             180
 gcc cac aca ctc acc gag aac cgc gtc ctg cag aac tcc agg cac ccc
                                                                       624
 Ala His Thr Leu Thr Glu Asn Arg Val Leu Gln Asn Ser Arg His Pro
                             200
                                                  205
 tto cto aca goo ctg aag tac tot tto cag acc cac gac cgc cto tgc
                                                                       672
 Phe Leu Thr Ala Leu Lys Tyr Ser Phe Gln Thr His Asp Arg Leu Cys
                                              220
                         215
 ttt gtc atg gag tac gcc aac ggg ggc gag ctg ttc ttc cac ctg tcc
                                                                       720
  Phe Val Met Glu Tyr Ala Asn Gly Gly Glu Leu Phe Phe His Leu Ser
                                         235
                      230
 cgg gaa cgt gtg ttc tcc gag gac cgg gcc cgc ttc tat ggc gct gag
                                                                       768
 Arg Glu Arg Val Phe Ser Glu Asp Arg Ala Arg Phe Tyr Gly Ala Glu
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<220>

245

| att Ile | gtg Val | tca Ser | Ala | ctg Leu | gac Asp | tac Tyr | Leu | cac His 265 | tcg Ser | gag Glu | aag Lys | aac Asn | gtg Val 270 | gtg Val | tac Tyr | 816 |
|------------|--------------|-------------------|--------------------|-------------------|--------------|--------------|--------------|--------------------|--------------|--------------|---------------|-------------------|----------------------|------------|------------------------|--------------|
| cgg Arg | gac Asp | ctc Leu 275 | 260 aag Lys | ctg Leu | gag Glu | aac Asn | ctc | atq | ctg Leu | gac Asp | aag Lys | gac Asp 285 | ggg | cac His | att Ile | 864 |
| Lys | Ile | aca Thr | Asp | ttc Phe | Gly | Leu 295 | Cys | Lys | Glu | GLy | 300 | ьуs | Asp | GTÀ | Ата | 912 |
| Thr | atg Met | Lys | Thr | ttt Phe | Cys 310 | Gly | Thr | Pro | Glu | Tyr 315 | Leu | Ala | Pro | GIU | 320 | 960 |
| ctg Leu | Glu | Asp | Asn | gac Asp 325 | Tyr | Gly | Arg | Ala | Val 330 | Asp | Trp | Trp | GIY | 335 | GIÀ | 1008 |
| Val | Val | Met | Tyr 340 | gag Glu | Met | Met | Cys | G1y 345 | Arg | ьeu | Pro | Pne | 350 | ASII | GIII | 1056 |
| Asp | His | Glu 355 | Lys | ctt Leu | Phe | Glu | Leu 360 | Ile | Leu | Met | GLu | 365 | тте | Arg | PHE | 1104 |
| Pro | Arg | Thr | Leu | Gly | Pro | Glu 375 | Ala | Lys | Ser | Leu | ьеи 380 | Ser | GTĀ | тeп | ctc Leu | 1152 |
| Lys 385 | Lys | Asp | Pro | Lys | Gln 390 | Arg | Leu | Gly | Gly | G1y 395 | Ser | GLU | Asp | Ala | Lys 400 | 1200 |
| gag Glu | Ile | Met | Gln | His 405 | Arg | Phe | Phe | Ala | Gly 410 | He | · vaı | rrp |) GIII | 415 | | 1248 |
| Tyr | Glu | Lys | Lys | Leu | Ser | Pro | Pro | Phe 425 | Lys | Pro | GIN | ı val | 430 |)) | g gag Glu | 1296 |
| Thr | Asp | Thr 435 | Arg | Tyr | Phe | Asp | Glu 440 | Glu | Phe | Thr | : Ala | 445 | і мес 5 | . TT6 | acc Thr | 1344 |
| Ile | Thr | Pro | Pro | Asp | Gln | Asp 455 | Asp | Ser | Met | . Glu | 1 Cys 460 | s Val) | L Asp | sei | gag Glu | 1392 1440 |
| Arg | y Arg | Pro | His | : Phe | Pro 470 | Gln | Phe | e Ser | Туг | Sei 475 | r Ala 5 | a Sei | r sei | r 111. | g gcc r Ala 480 | 1440 |
| Sei | Asp | Pro | Pro | Val 485 | . Ala | Thr | Met | . Val | . Sei 490 | : Ly:) | s GI | y GI | u GI | 49 | | 1536 |
| Thi | c Gly | / Val | L Vai | l Pro |) Ile | e Lei | ı Val | 505 505 | ı Let | ı As | b er | y AS | р va. 51 | 0 AS | c ggc n Gly | 1584 |
| Hi | s Ly: | s Phe | e Se: | r Val | l Se | : Gly | / Gli 520 | រ Gly 0 | y Gli | ı GI | y As | р А1 52 | a rn 5 | гту | c ggc r Gly | |
| Lу | s Lei | u Thi | r Le | u Ly | s Phe | ∋ Il∈ 53 | e Су: 5 | s Th: | r Th | r GI | у ьу 54 | s ье | u Pr | o va | g ccc l Pro | |
| Tr 54 | p Pr | o Th | r Le | u Va | 1 Th: 55 | r Th O | r Le | u Th | r Ty | r GI 55 | y va 5 | .I G1 | .п Су | S PI | c agc se Ser 560 | |
| Ar | g Ty | r Pr | o As | р Ні 56 | s Me 5 | t Ly | s Gl | n Hı | s As 57 | р Рл О | ie Pn | те г7 | /S SE | 57 | | |
| cc Pr | c ga o Gl | a gg u Gl | c ta y Ty 58 | r Va | c ca 1 Gl | g ga n Gl | g cg u Ar | c ac g Th 58 | r Il | c tt e Ph | c tt ne Ph | c aa ne Ly | ag ga /s As 59 | sp As | ac ggc ap Gly | |

| Asn | Tyr | Lys 595 | Thr | Arg | Ala | Glu | Val 600 | Lys | Phe | Glu | Gly | Asp 605 | acc Thr | Leu | Val | 1824 |
|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------|
| Asn | Arg 610 | Ile | Glu | Leu | Lys | Gly 615 | Ile | Asp | Phe | Lys | Glu 620 | Asp | ggc Gly | Asn | Ile | 1872 |
| ctg Leu 625 | ggg ggg | cac His | aag Lys | ctg Leu | gag Glu 630 | tac Tyr | aac Asn | tac Tyr | aac Asn | agc Ser 635 | cac His | aac Asn | gtc Val | tat Tyr | atc Ile 640 | 1920 |
| atα | gcc Ala | gac Asp | aag Lys | cag Gln 645 | aaq | aac Asn | ggc Gly | atc Ile | aag Lys 650 | gtg Val | aac Asn | ttc Phe | aag Lys | atc Ile 655 | cgc Arg | 1968 |
| cac His | aac Asn | atc Ile | gag Glu 660 | gac | ggc Gly | agc Ser | gtg Val | cag Gln 665 | ctc | gcc Ala | gac Asp | cac His | tac Tyr 670 | cag Gln | cag Gln | 2016 |
| aac Asn | acc Thr | ccc Pro 675 | atc | ggc Gly | gac Asp | ggc Gly | ccc Pro 680 | gtg | ctg Leu | ctg Leu | ccc Pro | gac Asp 685 | aac Asn | cac His | tac Tyr | 2064 |
| ctg Leu | agc Ser 690 | acc | cag Gln | tcc Ser | gcc Ala | ctg Leu 695 | agc | aaa Lys | gac Asp | ccc Pro | aac Asn 700 | gag Glu | aag Lys | cgc Arg | gat Asp | 2112 |
| cac His 705 | ato | gtc Val | ctg Leu | ctg Leu | gag Glu 710 | ttc | gtg Val | acc Thr | gcc Ala | gcc Ala 715 | Gly | atc Ile | act Thr | ctc Leu | ggc Gly 720 | 2160 |
| atg | | | | | aag Lys | | | | | | | | | | | 2181 |

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Val Thr Met Asn Glu Phe Glu Tyr Leu Lys Leu Leu Gly Lys Gly Thr
               150
                                   155
Phe Gly Lys Val Ile Leu Val Lys Glu Lys Ala Thr Gly Arg Tyr Tyr
                            170
              165
Ala Met Lys Ile Leu Lys Lys Glu Val Ile Val Ala Lys Asp Glu Val
                           185 190
          180
Ala His Thr Leu Thr Glu Asn Arg Val Leu Gln Asn Ser Arg His Pro
     195 200
Phe Leu Thr Ala Leu Lys Tyr Ser Phe Gln Thr His Asp Arg Leu Cys
                                      220
       215
Phe Val Met Glu Tyr Ala Asn Gly Gly Glu Leu Phe Phe His Leu Ser
                                  235
Arg Glu Arg Val Phe Ser Glu Asp Arg Ala Arg Phe Tyr Gly Ala Glu
                               250
              245
Ile Val Ser Ala Leu Asp Tyr Leu His Ser Glu Lys Asn Val Val Tyr
                                       270
                            2.65
          260
Arg Asp Leu Lys Leu Glu Asn Leu Met Leu Asp Lys Asp Gly His Ile
                                          285
                        280
Lys Ile Thr Asp Phe Gly Leu Cys Lys Glu Gly Ile Lys Asp Gly Ala
                    295
                                       300
Thr Met Lys Thr Phe Cys Gly Thr Pro Glu Tyr Leu Ala Pro Glu Val
                                   315
                  310
Leu Glu Asp Asn Asp Tyr Gly Arg Ala Val Asp Trp Trp Gly Leu Gly
                             330
              325
Val Val Met Tyr Glu Met Met Cys Gly Arg Leu Pro Phe Tyr Asn Gln
                          345 350
         340
Asp His Glu Lys Leu Phe Glu Leu Ile Leu Met Glu Glu Ile Arg Phe
               360 365
Pro Arg Thr Leu Gly Pro Glu Ala Lys Ser Leu Leu Ser Gly Leu Leu
                                       380
                     375
Lys Lys Asp Pro Lys Gln Arg Leu Gly Gly Gly Ser Glu Asp Ala Lys
                  390
                                   395
Glu Ile Met Gln His Arg Phe Phe Ala Gly Ile Val Trp Gln His Val
                                410
              405
Tyr Glu Lys Lys Leu Ser Pro Pro Phe Lys Pro Gln Val Thr Ser Glu
                                    430
                            425
           420
Thr Asp Thr Arg Tyr Phe Asp Glu Glu Phe Thr Ala Gln Met Ile Thr
                        440
 Ile Thr Pro Pro Asp Gln Asp Asp Ser Met Glu Cys Val Asp Ser Glu
                              460
                     455
 Arg Arg Pro His Phe Pro Gln Phe Ser Tyr Ser Ala Ser Ser Thr Ala
        470 475
 Ser Asp Pro Pro Val Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe
                                490
        485
 Thr Gly Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly
         500 505
 His Lys Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly
                                           525
                         520
     515
 Lys Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro
                      535
                                       540
 Trp Pro Thr Leu Val Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser
                                    555
                  550
 Arg Tyr Pro Asp His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met
                                570
 Pro Glu Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly
                                              590
                             585
           580
 Asn Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val
                         600
       595
 Asn Arg Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile
                                     620
                     615
 Leu Gly His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile
                                635
                 630
 Met Ala Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg
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650
His Asn Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln
                               665
Asn Thr Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr
                            680
Leu Ser Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp
                                          700
                       695
His Met Val Leu Leu Glu Phe Val Thr Ala Ala Gly Ile Thr Leu Gly
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                                     10
                                                                       96
 gcc aac cgc ttc gcc cgc aaa ggg gcg ctg agg cag aag aac gtg cat
 Ala Asn Arg Phe Ala Arg Lys Gly Ala Leu Arg Gln Lys Asn Val His
                                 25
             20
 gag gtg aaa gac cac aaa ttc atc gcc cgc ttc ttc aag caa ccc acc
                                                                       144
 Glu Val Lys Asp His Lys Phe Ile Ala Arg Phe Phe Lys Gln Pro Thr
                                                 45
                             40
  ttc tgc agc cac tgc acc gac ttc atc tgg ggg ttt ggg aaa caa ggc
                                                                       192
  Phe Cys Ser His Cys Thr Asp Phe Ile Trp Gly Phe Gly Lys Gln Gly
                         55
  ttc cag tgc caa gtt tgc tgt ttt gtg gtt cat aag agg tgc cat gag
                                                                       240
  Phe Gln Cys Gln Val Cys Cys Phe Val Val His Lys Arg Cys His Glu
                                          75
                      70
  ttc gtt acg ttc tct tgt ccg ggt gcg gat aag gga cct gac act gac
                                                                       288
  Phe Val Thr Phe Ser Cys Pro Gly Ala Asp Lys Gly Pro Asp Thr Asp
                                      90 -
                  85
  gac ccc agg agc aag cac aag ttc aaa atc cac aca tac gga agc cct
                                                                       336
  Asp Pro Arg Ser Lys His Lys Phe Lys Ile His Thr Tyr Gly Ser Pro
                                 105
                                                     110
  ace tte tgt gat cae tgt ggg tee etg ete tat gga ett ate eae eaa
                                                                       384
  Thr Phe Cys Asp His Cys Gly Ser Leu Leu Tyr Gly Leu Ile His Gln
                              120
          115
  ggg atg aaa tgt gac acc tgc gac atg aat gtt cac aac cag tgt gtg
                                                                       432
  Gly Met Lys Cys Asp Thr Cys Asp Met Asn Val His Asn Gln Cys Val
```

135

| Ile | aat Asn | gac Asp | cct Pro | agc Ser | ctc Leu 150 | tgc Cys | gga Gly | atg Met | gat Asp | cac His 155 | aca Thr | gag Glu | aag Lys | agg Arg | ggg Gly 160 | | 480 |
|-------------------|----------------------|-------------------|-------------------|-------------------|-------------------|-----------------------|-------------------|-------------------|--------------------|----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------------|-------|
| 145 cgg Arg | att Ile | tat Tyr | ctg Leu | aag Lys 165 | act | gag Glu | gtc Val | act Thr | gat Asp 170 | qaa | aag Lys | ctc Leu | cac His | gtc Val 175 | aco Thr | f | 528 |
| gta Val | cga Arg | gat Asp | gca Ala 180 | aaa | aat Asn | cta Leu | atc Ile | cct Pro 185 | atq | gat Asp | cca Pro | aat Asn | ggg Gly 190 | ctt Leu | tco Sei | ; I | 576 |
| gat Asp | cct Pro | tat Tyr 195 | ata | aag Lys | ctg Leu | aaa Lys | cta Leu 200 | atc | cct Pro | gac Asp | ccc Pro | aag Lys 205 | aat Asn | gag Glu | ago Sei | c C | 624 |
| aaa Lys | Gln | 222 | acc Thr | aaa Lys | acc Thr | atc Ile 215 | cac | tcc Ser | aac Asn | ctg Leu | aat Asn 220 | Pro | cag Gln | tgg Trp | aat Asi | n. | 672 |
| Glu | 210 tcc Ser | ttc Phe | acg Thr | ttc Phe | aaa Lys 230 | tta Leu | aaa Lys | cct Pro | tca Ser | gac Asp 235 | aaa Lys | gac Asp | cgg Arg | cga Arg | cto Let | u | 720 |
| 225 tct Ser | gta Val | gaa Glu | ato | tgg Trp 245 | gac Asp | tgg Trp | gat Asp | cgg Arg | acg Thr 250 | act Thr | cgg Arg | aat Asn | gac Asp | ttc Phe 255 | ine. | g t | 768 |
| gga Gly | tcc Ser | ctt Leu | tco Ser 260 | ttt Phe | aat | gtc Val | tca Ser | gag Glu 265 | cta Leu | atg Met | aag Lys | atg Met | ccg Pro 270 | Ата | ag Se | t r | 816 |
| Gly | Trp | Tyr 275 | aaa Lys | a gct s Ala | His | aac Asn | Gln 280 | Glu | Glu | GIY | GIU | 285 | Tyr | ASI | ı va | 1 | 864 |
| Pro | Ile | cca | gaa Glu | ı Gly | / Asp | gaa Glu 295 | Glu | Gly | Asn | мет | 300 |) Ter | LAIG | G11 | т ту | 3 | 912 |
| Phe | gag Glu | aaa Lys | s Ala | a Lys | s Leu 310 | ggt Gly | Pro | Val | Gly | 7 Asn 315 | ь | s val | LITE | s Sei | 32 | 20 | 960 |
| tca Ser | gaa Glu | ı Ası | o Ar | g Ly: 32: | s Glr 5 | cca Pro | Ser | : Asn | 330 | ı ьеи) | (AS | o Arc | y vai | 33 | 5 | u | 1008 |
| Thi | Asp |) Ph | e As | n Pho O | e Lei | atg ı Met | . Val | L Leu 345 | ı Gl <u>y</u> S | / Lys | 6 G1 | y se | 350 |) s GT | λг | / S | 1056 |
| Val | L Met | : Le | u Al 5 | a As | p Ar | g aag g Lys | 360 360 | y Thi | f GIU | ı GIV | те | u 19. 36 | 5 5 | 1 II. | е пу | y S | 1104 |
| 110 | e Let | ı Ly | s Ly | s As | p Va | g gtg l Val 375 | L I10 5 | e Gli | n Asj | p Ası | 9 AS 38 | pva O | I GI | u cy | 5 11 | | 1152 |
| Me | t Val | 1 G1 | u Ly | s Ar | g Va 39 | g cto 1 Lei 0 | ı Al | a Le | и ге | u Asj 39 | р ьу 5 | SPI | O PI | O FII | 4 | 00 | 1200 |
| Th | r Gl | n Le | u Hi | s Se 40 | r Cy | c tto s Pho | e Gl | n Th | r Va 41 | 1 As | p Ar | g Le | u ry | 41 | .5 | aı | 1248 |
| Me | t Gl | u Ty | r Va 41 | al As 20 | n Gl | c gg y Gl | y As | р Le 42 | и ме 5 | т ту | r HJ | LS II | 43 | 0 | _11 V | a. | 1344 |
| Gl | у Гу | s Ph | ne Ly | ys Gl | Lu Pr | a ca o Gl | n Al 44 | .a Va .0 | l Ph | іе Ту | r A. | 1a A. | .a G1 15 | .u IJ | Le s | er | 1392 |
| 11 | e Gl | y Le | eu P | he Pl | ne Le | t ca eu Hi 45 | s Ly 5 | s Ar | g G1 | -À 11 | .e 1. 4 | 1e 1 <u>9</u> | Yr Ai | .g A | эЪ т | ieu | 1440 |
| L | ag ct /s Le 55 | g aa eu A | ac a sn A | at g sn V | al Me | g ct et Le | g aa u As | ac to sn Se | a ga er Gl | aa gg Lu Gl 47 | .у н | ac a is I | le Ly | ys I | Te t | Ala 180 | 7,110 |

| gac Asp | ttc Phe | ggg ggg | atg Met | tgc Cys | aag Lys | gaa Glu | cac His | Met | atg Met 490 | gat Asp | gga Gly | gtc Val | acg Thr | acc Thr 495 | agg Arg | 1488 |
|------------|-------------------|-------------------|-------------------|--------------------|--------------|-------------------|-------------------|-------------------|--------------------|------------|-------------------|-------------------|-------------------|-------------------|------------------------|--------------|
| acc Thr | ttc Phe | tgc Cys | Gly | 485 act Thr | ccg Pro | gac Asp | tac Tyr | att | qcc | cca Pro | gag Glu | ata Ile | atc Ile 510 | gct | tac Tyr | 1536 |
| cag Gln | ccg Pro | Tyr | ggg Gly | aag Lys | tct Ser | gta Val | gat Asp 520 | taa | tgg Trp | gcg Ala | tac Tyr | ggt Gly 525 | gtg Val | ctg Leu | ctg Leu | 1584 |
| tac Tyr | gag Glu 530 | 515 atg Met | cta Leu | gcc Ala | ggg ggg | cag Gln 535 | cct | ccg Pro | ttt Phe | gat Asp | ggt Gly 540 | gaa Glu | gat Asp | gaa Glu | gat Asp | 1632 |
| Glu 545 | ctg Leu | Phe | Gln | tct Ser | 11e 550 | atg Met | Glu | His | Asn | Val 555 | Ser | Tyr | Pro | гу | 560 | 1680 |
| tta | tcc Ser | aag Lys | gaa Glu | gcc Ala 565 | atc | tcc Ser | atc Ile | tgc Cys | aaa Lys 570 | gga Gly | ctt Leu | atg Met | acc Thr | aaa Lys 575 | cag Gln | 1728 |
| cct Pro | gcc Ala | aag Lys | cga Arg 580 | ctg Leu | ggc Gly | tgc Cys | ggg Gly | ccc Pro 585 | gag Glu | gga Gly | gag Glu | agg Arg | gat Asp 590 | gtc Val | aga Arg | 1776 |
| Glu | His | Ala | ttc Phe | ttc Phe | Arg | Arg | Ile 600 | Asp | Trp | Glu | ьys | ьеи 605 | GIU | ASII | ALG | 1824 |
| Glu | Ile | caa Gln | Pro | cca Pro | Phe | Lys 615 | Pro | Lys | Val | Cys | 620 | r Lys | GIY | Ата | GIU | 1872 |
| Asn | ttt Phe | Asp | Lys | Phe | Phe 630 | Thr | Arg | Gly | GIn | 635 | vaı | . ьес | IIII | FIC | cca Pro 640 | 1920 |
| gat Asp | Gln | Leu | Val | 11e | Ala | Asn | Ile | Asp | 650 | Ser | ASP |) Pne | e GIU | 655 | | 1968 |
| Ser | Tyr | Val | . Asn 660 | Pro | Gln | Phe | Val | . His 665 | Pro | 116 | е тег | 1 GII | 670 | HIC | gta Val | 2016 |
| Gly | Arg | Ala | Met | Ser | Lys | Gly | Glu 680 | ı Glu) | Leu | Phe | e Thi | 68; | , var | . val | c cca L Pro | 2064 |
| Il∈ | Lev 690 | ı Val | Glu | ı Leu | ı Asp | Gly 695 | Asp | o Val | . Asn | ı GIŞ | 700 | о и гу. | s Pne | s se | gtt r Val | 2112 |
| Ser | Gly | / Gli | ı Gl; | y Glu | ı Gly 710 | , Asp) | Ala | a Thr | туг | 71 | 2 2 гй: | з ье | 1 1111 | те, | t aaa u Lys 720 | 2160 |
| Phe | ∍ Ile | е Су | s Thi | r Thi 725 | c Gly | , Lys | Lei | u Pro | o Val 730 | L Pro | o Tr | р ы | 0 111. | 73 | | 2208 2256 |
| Th: | r Th | r Le | u Th: | r Ty: O | r Gly | y Val | L Gl: | n Cys 745 | s Phe 5 | e Se | r Ar | g Ty | 75 | 0 AS | t cat p His | |
| Me | t Ly | s Gl 75 | n Hi 5 | s As | p Phe | e Phe | e Ly 76 | s Se: 0 | r Ala | a Me | t Pr | 76 | u G1 5 | у ту | t gta r Val | |
| Gl | n Gl | u Ar O | g Th | r Il | e Ph | е Ту: 77 | r Ly 5 | s As | p As | p Gi | y As 78 | sn 19 80 | тъ | 5 11 | a cgt ir Arg | |
| Al | a Gl | u Va | l Ly | s Ph | e Gl 79 | u Gl O | y As | p Th | r Le | u va 79 | 11 AS 95 | sn Ai | .g 11 | .6 61 | u Leu 800 | ı) |
| aa Ly | a gg s Gl | t at y Il | t ga .e As | t tt p Ph 80 | е Гу | a ga s Gl | a ga u As | ıt gg sp Gl | a aa y As 81 | נו ח | t ct e Le | eu Gl | ya ca Ly Hi | s Ly 81 | aa atg 7s Met 15 | , |

```
gaa tac aat tat aac tca cat aat gta tac atc atg gca gac aaa cca
                                                                    2496
Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Pro
                               825
           820
                                                                    2544
aag aat ggc atc aaa gtt aac ttc aaa att aga cac aac att aaa gat
Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Lys Asp
                                               845
                           840
       835
gga agc gtt caa tta gca gac cat tat caa caa aat act cca att ggc
                                                                    2592
Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly
                                            860
                       855
                                                                     2640
gat ggc cct gtc ctt tta cca gac aac cat tac ctg tcc acg caa tct
Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser
                                       875
                    870
865
                                                                     2688
gcc ctt tcc aaa gat ccc aac gaa aag aga gat cac atg atc ctt ctt
Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Ile Leu Leu
                                    890
               885
gag ttt gta aca gct gct ggg att aca cat ggc atg gat gaa cta tac
                                                                     2736
Glu Phe Val Thr Ala Ala Gly Ile Thr His Gly Met Asp Glu Leu Tyr
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                                                                     2751
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Lys Pro Gln Glu
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205
                          200
       195
Lys Gln Lys Thr Lys Thr Ile Arg Ser Asn Leu Asn Pro Gln Trp Asn
                                220
                   215
Glu Ser Phe Thr Phe Lys Leu Lys Pro Ser Asp Lys Asp Arg Arg Leu
                           235
                 230
Ser Val Glu Ile Trp Asp Trp Asp Arg Thr Thr Arg Asn Asp Phe Met
                                 250
             245
Gly Ser Leu Ser Phe Gly Val Ser Glu Leu Met Lys Met Pro Ala Ser
                             265
       260
Gly Trp Tyr Lys Ala His Asn Gln Glu Glu Gly Glu Tyr Tyr Asn Val
                                            285
                         280
Pro Ile Pro Glu Gly Asp Glu Glu Gly Asn Met Glu Leu Arg Gln Lys
                                        300
                     295
Phe Glu Lys Ala Lys Leu Gly Pro Val Gly Asn Lys Val Ile Ser Pro
                                    315
Ser Glu Asp Arg Lys Gln Pro Ser Asn Asn Leu Asp Arg Val Lys Leu
                              330
             325
Thr Asp Phe Asn Phe Leu Met Val Leu Gly Lys Gly Ser Phe Gly Lys
                              345
         340
Val Met Leu Ala Asp Arg Lys Gly Thr Glu Glu Leu Tyr Ala Ile Lys
                        360
Ile Leu Lys Lys Asp Val Val Ile Gln Asp Asp Val Glu Cys Thr
                               380
            375
Met Val Glu Lys Arg Val Leu Ala Leu Leu Asp Lys Pro Pro Phe Leu
                         395
       390
Thr Gln Leu His Ser Cys Phe Gln Thr Val Asp Arg Leu Tyr Phe Val
                                 410
              405
Met Glu Tyr Val Asn Gly Gly Asp Leu Met Tyr His Ile Gln Gln Val
                              425
Gly Lys Phe Lys Glu Pro Gln Ala Val Phe Tyr Ala Ala Glu Ile Ser
                                             445
                          440
Ile Gly Leu Phe Phe Leu His Lys Arg Gly Ile Ile Tyr Arg Asp Leu
                                        460
                      455
    450
Lys Leu Asn Asn Val Met Leu Asn Ser Glu Gly His Ile Lys Ile Ala
                                     475
                  470
Asp Phe Gly Met Cys Lys Glu His Met Met Asp Gly Val Thr Thr Arg
                                  490
               485
Thr Phe Cys Gly Thr Pro Asp Tyr Ile Ala Pro Glu Ile Ile Ala Tyr
                            505
 Gln Pro Tyr Gly Lys Ser Val Asp Trp Trp Ala Tyr Gly Val Leu Leu
                                   525
                         520
        515
 Tyr Glu Met Leu Ala Gly Gln Pro Pro Phe Asp Gly Glu Asp Glu Asp
                     535
                                         540
 Glu Leu Phe Gln Ser Ile Met Glu His Asn Val Ser Tyr Pro Lys Ser
        550
                                      555
 Leu Ser Lys Glu Ala Val Ser Ile Cys Lys Gly Leu Met Thr Lys Gln
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 Pro Ala Lys Arg Leu Gly Cys Gly Pro Glu Gly Glu Arg Asp Val Arg
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                               585
            580
 Glu His Ala Phe Phe Arg Arg Ile Asp Trp Glu Lys Leu Glu Asn Arg
                           600
 Glu Ile Gln Pro Pro Phe Lys Pro Lys Val Cys Gly Lys Gly Ala Glu
                                          620
                       615
 Asn Phe Asp Lys Phe Phe Thr Arg Gly Gln Pro Val Leu Thr Pro Pro
                                     635
                   630
 Asp Gln Leu Val Ile Ala Asn Ile Asp Gln Ser Asp Phe Glu Gly Phe
                                  650
 Ser Tyr Val Asn Pro Gln Phe Val His Pro Ile Leu Gln Ser Ala Val
                              665
            660
 Gly Arg Ala Met Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro
                          680
 Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly Gln Lys Phe Ser Val
                       695
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715 720
                  710
Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val
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               725
Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His
                            745
           740
Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val
                 760
Gln Glu Arg Thr Ile Phe Tyr Lys Asp Asp Gly Asn Tyr Lys Thr Arg
                   775
                                          780
Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu
                                      795
                   790
Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Met
                                                     815
                                  810
               805
Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Pro
                               825
           820
Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Lys Asp
                           840
Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly
                                          860
                     855
Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser
                                      875
                  870
Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Ile Leu Leu
                                 890
               885
Glu Phe Val Thr Ala Ala Gly Ile Thr His Gly Met Asp Glu Leu Tyr
                               905
           900
Lys Pro Gln Glu
        915
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      2157
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 Met Ser Ser Ile Leu Pro Phe Thr Pro Pro Val Val Lys Arg Leu Leu
                                    10
                5
                                                                     96
 gga tgg aag aag tca gct ggt ggg tct gga gga gca ggc gga gga gag
 Gly Trp Lys Lys Ser Ala Gly Gly Ser Gly Gly Ala Gly Gly Gly Glu
                                25
            20
 cag aat ggg cag gaa gaa aag tgg tgt gag aaa gca gtg aaa agt ctg
                                                                    144
 Gln Asn Gly Gln Glu Glu Lys Trp Cys Glu Lys Ala Val Lys Ser Leu
                            40
       35
  gtg aag aag cta aag aaa aca gga cga tta gat gag ctt gag aaa gcc
                                                                    192
```

Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys

| Val | Lys | Lys | Leu | Lys | Lys | Thr | Gly | Arg | Leu | Asp | Glu | Leu | Glu | Lys | Ala | |
|-------------------|-------------------|-------------------|-------------------|-------------------|-----------------------|--------------------|-------------------|--------------------|-------------------|---------------------|--------------------|--------------------|----------------------|-------------------|---------------------|------|
| | 50 | | | | | 55 | | | | | 60 | | | | | 240 |
| Ile | Thr | Thr | Gln | Asn | tgt Cys 70 | Asn | Thr | Lys | Cys | 75 | Thr | тте | PIO | ser | 80 | |
| tac | tct Ser | gaa Glu | att Ile | Trp | gga Gly | ctg Leu | agt Ser | aca Thr | cca Pro 90 | aat Asn | acg Thr | ata Ile | gat Asp | cag Gln 95 | tgg Trp | 288 |
| gat Asp | aca Thr | aca Thr | Gly | 85 ctt Leu | tac Tyr | agc Ser | ttc Phe | tct Ser 105 | qaa | caa Gln | acc Thr | agg Arg | tct Ser 110 | ctt | gat Asp | 336 |
| ggt Gly | cgt Arg | Leu | 100 cag Gln | gta Val | tcc Ser | cat His | cga Arg 120 | aaa | gga Gly | ttg Leu | cca Pro | cat His 125 | gtt | ata Ile | tat Tyr | 384 |
| tgc Cys | Arg | 115 tta Leu | tgg Trp | cgc Arg | tgg Trp | cct Pro 135 | gat | ctt Leu | cac His | agt Ser | cat His 140 | cat His | gaa Glu | ctc Leu | aag Lys | 432 |
| Ala | 130 att Ile | gaa Glu | aac Asn | tgc Cys | gaa Glu 150 | tat | gct Ala | ttt Phe | aat Asn | ctt Leu 155 | aaa Lys | aag Lys | gat Asp | gaa Glu | gta Val 160 | 480 |
| 145 tgt Cys | gta Val | aac Asn | cct Pro | tac Tyr 165 | cac His | tat Tyr | cag Gln | aga Arg | gtt Val 170 | gag | aca Thr | cca Pro | gtt Val | ttg Leu 175 | cct Pro | 528 |
| cca Pro | gta Val | tta Leu | Val | CCC | cga Arg | cac His | acc Thr | gag Glu 185 | atc | cta Leu | aca Thr | gaa Glu | ctt Leu 190 | ccg Pro | cct Pro | 576 |
| ctg Leu | gat Asp | Asp | Tyr | act Thr | cac His | tcc Ser | att Ile 200 | cca | gaa Glu | aac Asn | act Thr | aac Asn 205 | ttc Phe | cca Pro | gca Ala | 624 |
| gga Gly | Ile | Glu | cca | cag Gln | agt Ser | aat Asn 215 | tat | att Ile | cca Pro | gaa Glu | acg Thr 220 | cca | cct Pro | cct Pro | gga Gly | 672 |
| Tyr | Ile | ant | gaa Glu | gat Asp | gga Gly 230 | gaa | aca Thr | agt Ser | gac Asp | caa Gln 235 | cag Gln | ttg Leu | aat Asn | caa Gln | agt Ser 240 | 720 |
| Met | gac Asp | Thr | Gly | Ser | cca Pro | Ala | GLu | Leu | 250 | Pro | THE | TIIL | ьеи | 255 | | 768 |
| Val | Asn | His | s Ser 260 | ttg Leu | gat Asp | Leu | Gln | 265 | vai | . Tnr | Tyr | Ser | 270 | FIC | gca Ala | 816 |
| Ph€ | e Trp | Cys | tca Ser | ata : Ile | e Ala | Tyr | Tyr 280 | : Glu | ı Lev | ı Asn | GII | 285 | , vai | . GI | gaa Glu | 864 |
| Thi | Phe | c cat | gca s Ala | ser | r Glr | 295 | Ser | : Let | ı Tnı | c vai | . ASL |) 9 GT | , FIIC | ; 1111 | a gac Asp | 912 |
| Pro | a tca o Sei | 1 | t tca n Ser | a gaç Glu | g agg ı Arg 310 | g tto g Phe | t.ac | tta Lei | a ggt ı Gly | tta y Leu 315 | т гет | tco Sei | aat Asr | gti Vai | aac L Asn 320 | 960 |
| 30 Cg Ar | | t gc | c acq a Thi | g gta r Val | a gaa l Glu | ato | aca Thi | a aga r Aro | a ago g Aro | д нта | ata s Ile | a gga e Gly | a aga y Arq | g G1: 33 | a gtg y Val 5 | 1008 |
| cg Ar | c tt g Le | a ta u Ty | c tac r Ty: | c ata | a aat | t ggg y Gly | g gaa 7 Gl | a gt u Va 34 | t tt | t gct | t gaq a Gli | g tgo u Cy: | c cta s Lei 35 | 1 50 | t gat r Asp | 1056 |
| ag Se | t gc r Al | a Il | c tt | t at | g cad | g age n Se: | c cc r Pr | c aa o As | t ta | t aa s`As | t cae | g ag n Ar 36 | g ry | t gg r Gl | c tgg y Trp | 1104 |
| ca Hi | s Pr | o Al | 2 20 | a gt r Va | g tg l Cy | t aa s Ly 37 | a at s Il | t cc | a cc o Pr | a gg o Gl | c tg y Cy 38 | S AS | t ct n Le | g aa u Ly | g atc s Ile | 1152 |
| tt | 37 c aa | c aa | .c ca | g ga | a tt | t gc | t gc | t ct | t ct | g gc | | | t gt | t aa | t cag | 1200 |

```
Phe Asn Asn Gln Glu Phe Ala Ala Leu Leu Ala Gln Ser Val Asn Gln
                             395
                    390
ggt ttt gaa gcc gtc tat cag cta act aga atg tgc acc ata aga atg
                                                                    1248
Gly Phe Glu Ala Val Tyr Gln Leu Thr Arg Met Cys Thr Ile Arg Met
                                    410
                405
agt ttt gtg aaa ggg tgg gga gca gaa tac cga agg cag acg gta aca
                                                                    1296
Ser Phe Val Lys Gly Trp Gly Ala Glu Tyr Arg Arg Gln Thr Val Thr
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agt act cct tgc tgg att gaa ctt cat ctg aat gga cct cta cag tgg
                                                                    1344
Ser Thr Pro Cys Trp Ile Glu Leu His Leu Asn Gly Pro Leu Gln Trp
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ttg gac aaa gta tta act cag atg gga tcc cct tca gtg cgt tgc tca
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Leu Asp Lys Val Leu Thr Gln Met Gly Ser Pro Ser Val Arg Cys Ser
                                            460
                        455
    450
age atg tea tgg gta eeg egg gee egg gat eea eeg gte gee aee atg
                                                                     1440
Ser Met Ser Trp Val Pro Arg Ala Arg Asp Pro Pro Val Ala Thr Met
                                        475
                    470
                                                                     1488
gtg agc aag ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg gtc
Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val
                                    490
                485
gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc gag
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Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu
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ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc tgc
                                                                     1584
Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys
                                                525
                            520
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acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc ctg
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Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu
                                            540
                         535
acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag cag
                                                                     1680
Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln
                    550
cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag cgc
                                                                     1728
His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg
                                     570
                                                                     1776
acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag gtg
Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val
                                 585
            580
aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc atc
                                                                     1824
Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile
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                             600
 gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac aac
                                                                      1872
 Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn
                         615
                                                                      1920
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 Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly
                                         635
                     630
 atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc gtg
                                                                      1968
 Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val
                 645
 cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc ccc
                                                                      2016
 Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro
                                                     670
                                 665
 gtg ctg ctc ccc gac aac cac tac ctg agc acc cag tcc gcc ctg agc
                                                                      2064
 Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser
                                                  685
                             680
         675
 aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc gtg
                                                                      2112
 Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val
                                             700
                         695
 ace gee gee ggg ate act ete gge atg gae gag etg tae aag taa
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 705
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<211> 718

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<213> Artificial Sequence

<220>

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                              2.5
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                          40
       35
Val Lys Lys Leu Lys Lys Thr Gly Arg Leu Asp Glu Leu Glu Lys Ala
                    55
Ile Thr Thr Gln Asn Cys Asn Thr Lys Cys Val Thr Ile Pro Ser Thr
                                      75
                70
Cys Ser Glu Ile Trp Gly Leu Ser Thr Pro Asn Thr Ile Asp Gln Trp
                                   90
               85
Asp Thr Thr Gly Leu Tyr Ser Phe Ser Glu Gln Thr Arg Ser Leu Asp
                               105
            100
Gly Arg Leu Gln Val Ser His Arg Lys Gly Leu Pro His Val Ile Tyr
                                              125
                           120
        115
Cys Arg Leu Trp Arg Trp Pro Asp Leu His Ser His His Glu Leu Lys
                      135
Ala Ile Glu Asn Cys Glu Tyr Ala Phe Asn Leu Lys Lys Asp Glu Val
                                     155
                   150
Cys Val Asn Pro Tyr His Tyr Gln Arg Val Glu Thr Pro Val Leu Pro
                                             175
                                  170
                165
Pro Val Leu Val Pro Arg His Thr Glu Ile Leu Thr Glu Leu Pro Pro
                              185
           180
Leu Asp Asp Tyr Thr His Ser Ile Pro Glu Asn Thr Asn Phe Pro Ala
                                               205
                200
Gly Ile Glu Pro Gln Ser Asn Tyr Ile Pro Glu Thr Pro Pro Pro Gly
                                           220
                    215
 Tyr Ile Ser Glu Asp Gly Glu Thr Ser Asp Gln Gln Leu Asn Gln Ser
                                       235
                    230
 225
 Met Asp Thr Gly Ser Pro Ala Glu Leu Ser Pro Thr Thr Leu Ser Pro
                                   250
                245
 Val Asn His Ser Leu Asp Leu Gln Pro Val Thr Tyr Ser Glu Pro Ala
                               265
            260
 Phe Trp Cys Ser Ile Ala Tyr Tyr Glu Leu Asn Gln Arg Val Gly Glu
                                               285
                           280
 Thr Phe His Ala Ser Gln Pro Ser Leu Thr Val Asp Gly Phe Thr Asp
                                           300
                        295
 Pro Ser Asn Ser Glu Arg Phe Cys Leu Gly Leu Leu Ser Asn Val Asn
                                       315
                    310
 Arg Asn Ala Thr Val Glu Met Thr Arg Arg His Ile Gly Arg Gly Val
                                    330
                325
 Arg Leu Tyr Tyr Ile Gly Gly Glu Val Phe Ala Glu Cys Leu Ser Asp
                            345
 Ser Ala Ile Phe Val Gln Ser Pro Asn Cys Asn Gln Arg Tyr Gly Trp
                            360
 His Pro Ala Thr Val Cys Lys Ile Pro Pro Gly Cys Asn Leu Lys Ile
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375
Phe Asn Asn Gln Glu Phe Ala Ala Leu Leu Ala Gln Ser Val Asn Gln
                          395
                 390
Gly Phe Glu Ala Val Tyr Gln Leu Thr Arg Met Cys Thr Ile Arg Met
                               410
             405
Ser Phe Val Lys Gly Trp Gly Ala Glu Tyr Arg Arg Gln Thr Val Thr
                   425
          420
Ser Thr Pro Cys Trp Ile Glu Leu His Leu Asn Gly Pro Leu Gln Trp
              440
                                          445
Leu Asp Lys Val Leu Thr Gln Met Gly Ser Pro Ser Val Arg Cys Ser
                             460
          455
Ser Met Ser Trp Val Pro Arg Ala Arg Asp Pro Pro Val Ala Thr Met
                                  475
                  470
Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val
                               490
              485
Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu
           500
                           505
Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys
               520
                                       525
Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu
                              540
           535
Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln
                                  555
                 550
His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg
            565 570
Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val
                            585
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Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile
             600
Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn
                                       620
                     615
Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly
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               630
625
Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val
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                                650
              645
Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro
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                          665
Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser
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Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val
                     695 700
 Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys
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 <220>
 <223> Smad4-EGFP fusion
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<220>

<221> CDS

| - 400 | . 7 | c | | | | | | | | | | | | | | |
|-------|-----------|-------|-------|------------|----------|------------|------------|--------|-------|-------|-------------|-----------|-------------|-------|------------|-----|
| <400 | 7 / | 6 | ato | tct | att | aca | aat | aca | cca | aca | agt | aat | gat | gcc | tgt | 48 |
| Mot | Asn | Asn | Met | Ser | Ile | Thr | Asn | Thr | Pro | Thr | Ser | Asn | Asp | Ala | Cys | |
| 1 | | | | 5 | | | | | 10 | | | | | TD | | 0.6 |
| ata | agc | att | gtg | cat | agt | ttg | atg | tgc | cat | aga | caa | ggt | gga | gag | agt | 96 |
| Leu | Ser | Ile | Val | His | Ser | Leu | Met | Cys | His | Arg | Gln | Gly | СТА | Glu | Ser | |
| | | | 20 | | | | | 25 | | | | | 30 | | | 144 |
| gaa | aca | ttt | gca | aaa | aga | gca | att | gaa | agt | ttg | gta | aag | aag | Lou | Tue | 144 |
| Glu | Thr | | Ala | Lys | Arg | Ala | TTE | GIU | ser | reu | vaı | цу5 45 | цуз | пец | цуо | |
| | | 35 | | gaa | | ~a+ | 40 + c+ | ++2 | ata | aca | act | | act | aca | aat | 192 |
| gag | aaa | aaa | gat | Glu | LLG | yaı Aen | Ser | Len | Tle | Thr | Ala | Ile | Thr | Thr | Asn | |
| GIU | ьуs 50 | гАг | Asp | GIU | пец | 55 | 501 | 200 | | | 60 | | | | | |
| aaa | act | cat | cct | agt | aaa | tat | qtt | acc | ata | cag | aga | aca | ttg | gat | ggg | 240 |
| Glv | Ala | His | Pro | Ser | Lys | Cys | Val | Thr | Ile | Gln | Arg | Thr | Leu | Asp | GIA | |
| 65 | | | | | 70 | | | | | 75 | | | | | 00 | 200 |
| agg | ctt | cag | gtg | gct | ggt | cgg | aaa | gga | ttt | cct | cat | gtg | atc | tat | gcc | 288 |
| Arg | Leu | Gln | Val | Ala | Gly | Arg | Lys | Gly | Phe | Pro | HIS | vaı | TTE | 95 | ніа | |
| | | | | 85 | | | | ~~~ | 90 | 22+ | ~ 22 | cta | aaa | | att | 336 |
| cgt | ctc | tgg | agg | tgg Trp | CCT | gat | LAU | His | Lvs | Asn | Glu | Leu | Lvs | His | Val | |
| Arg | Leu | Trp | 100 | irb | PIO | АЗР | пец | 105 | цуо | 11011 | | | 110 | | | |
| 222 | tat | tat | cad | tat | aca | ttt | gac | tta | aaa | tgt | gat | agt | gtc | tgt | gtg | 384 |
| Lvs | Tvr | Cvs | Gln | Tyr | Ala | Phe | Asp | Leu | Lys | Cys | Asp | Ser | Val | Cys | Val | |
| | | 115 | | | | | 120 | | | | | 125 | | | | 430 |
| aat | cca | tat | cac | tac | gaa | cga | gtt | gta | tca | cct | gga | att | gat | ctc | tca | 432 |
| Asn | Pro | Tyr | His | Tyr | Glu | Arg | Val | Val | Ser | Pro | GTA | тте | Asp | Leu | ser | |
| | 130 | | | | | 135 | | | + | art | 140 | ato | ata | aaq | gat | 480 |
| gga | tta | aca | ctg | cag | agt | aat | gct | Dro | Sor | Ser | Met | Met | Val | Lvs | Asp | |
| | | Thr | Leu | . GIII | 150 | ASII | ALG | LIO | DCI | 155 | 1100 | | | - | 160 | |
| 145 | + > + | ato | cat | gac | ttt | gag | ασa | caq | cca | tcg | ttg | tcc | act | gaa | gga | 528 |
| Glu | Tvr | Val | His | Asp | Phe | Glu | ĞÎy | Gln | Pro | Ser | Leu | Ser | Thr | GIU | GIY | |
| | | | | 165 | | | | | 170 | | | | | 1/5 | | 576 |
| cat | tca | att | caa | acc | atc | cag | cat | cca | cca | agt | aat | cgt | gca | tcg | aca | 576 |
| His | Ser | Ile | | | Ile | Gln | His | Pro | Pro | Ser | Asn | Arg | 190 | ser | Thr | |
| | | | 180 |) | | | ~+~ | 185 | ~~~ | | tct | gag | | | act | 624 |
| gag | aca | tac | ago | acc | CCa | gct | Len | T.e.ii | Ala | Pro | Ser | Glu | Ser | Asr | gct Ala | |
| | | 10 | 5 | | | | 200 | | | | | 200 |) | | | |
| acc | · aσσ | , act | - acc | aac | ttt | ccc | aac | att | cct | gtg | gct | tcc | : aca | agt | cag | 672 |
| Thr | Ser | Th | r Ala | a Asn | . Phe | Pro | Asn | Ile | Pro | val | . Alā | ser | Thr | Ser | Gln | |
| | 210 | ١ | | | | 215 | , | | | | 220 |) | | | | 720 |
| cct | gco | ag | t ata | a ctg | ggg | ggc | ago | cat | agt | gaa | gga | CTO | T T C | g cag | g ata | 720 |
| | | a Se | r Ile | e Leu | ı Gly | y Gly | ser | HIS | Ser | 235 | : r GT? | , пес | т пес | 1 911 | lle 240 | |
| 225 | 5 | | | | 230 |) ~~~ | | | cac | | | a titi | act | . aat | cag | 768 |
| gca | a tca | a gg | g cc | c caç | n Pro | i gga | r Glr | Glr | Glr | n Asr | Gly | Phe | e Thi | r Ğĺ | y Gln | |
| | | | | 24 | วั | | | | 250 |) | | | | 25. | , | |
| CC | a act | t ac | t ta | c cat | cat | aac | ago | act | aco | acc | t tg | g act | t gga | a ag | t agg | 816 |
| Pre | o Ala | a Th | r Ty | r His | s His | s Asr | ı Sei | Thi | Th | r Thi | r Tr | o Thi | r GT | y se. | r Arg | |
| | | | 26 | Λ | | | | 265 |) | | | | 27 | U | | 864 |
| ac | t gc | a cc | a ta | c aca | a cct | t aat | t tt | g cct | cad | c cac | c ca | a aa | c ggo | c ca | t ctt | |
| Th | r Al | | | r Th | r Pro | o Ası | ı Lei | ı Pro |) HI: | S H1 | 5 61 | 11 AS | 11 GI. 5 | у пт | s Leu | |
| | | 27 | 5 | ~ ~ | . | a .c. | 280 | | | c aa: | a ca | | | g cc | t gtt | 912 |
| ca | g ca | c ca | C CC | g cc | o Me | y CCC | g Dri | o His | s Pr | o Gl | y Hi | s Ty | r Tr | p Pr | o Val | |
| | 20 | Λ | | | | 29. | 5 | | | | 30 | U | | | | |
| ca | c aa | τ αa | g ct | t gc | a tt | c ca | g cc | t cc | c at | t tc | c aa | t ca | t cc | t gc | t cct | 960 |
| | | ٠. | - | - | | | | | | | | | | | | |

| His | Ası | n G | lu I | eu 2 | Ala | Phe | Gln | Pro | Pro | Ile | Ser | Asn | His | Pro | Ala | Pro 320 | | |
|------------|----------------|--------------|------------|-------|-------|-------|------------------|------------|--------|-------|------------|------------|----------------|--------|--------|--------------|----------|-------|
| 205 | | | | | | 310 | | | | | 315 | | | | | 320 | | 1008 |
| gag | ta | t t | gg t | :gt 1 | tcc | att | gct | tac | ttt i | gaa | atg Mot | yar Nan | Val | Gln | Val | Glv | - | |
| Glu | ту | r T | rp C | | | Ile | Ala | Tyr | Pne | 330 | Met | мэр | Val | 0.1.11 | 335 | 011 | | |
| | | | | | 325 | | | | | | a++ | att | act | at.t. | | ασa | | 1056 |
| gag | ac | a t | tt a | ag | gtt | CCL | Com | agc Ser | Cyc | Dro | Tle | Val | Thr | Val | Asp | Ğİv | | |
| Glu | Th | r P | | | vaı | Pro | ser | Ser | 345 | FIO | 110 | · u · | | 350 | | - | | |
| | | | 3 | 340 | - ~ + | ~~~ | ~~~ | gat | 242 | +++ | tat | t.t.a | aat | | ctc | tcc | | 1104 |
| tac | gt | gg | ac c | CCT | Cor | Clu | Clu | Asp | Ara | Phe | Cvs | Leu | Glv | Gln | Leu | Ser | | |
| Tyr | va | | sp 1 | PIO | ser | СТУ | O _T y | 360 | **** 9 | | -1- | | 365 | | | | | |
| 22+ | - a+ | c c | 20 2 | ann | aca | gaa | acc | att | gag | aga | gca | agg | ttg | cac | ata | ggc | | 1152 |
| da. Asn | . yı | 1 4 | lie I | Ara | Thr | Glu | Ala | Ile | Glu | Arg | Āla | Arg | Leu | His | Ile | Gly | | |
| | 37 | Λ | | | | | 375 | | | | | 380 | | | | | | |
| aaa | | + ~ | rta (| caq | ttg | gaa | tgt | aaa | ggt | gaa | ggt | gat | gtt | tgg | gtc | agg | | 1200 |
| Lvs | Gl | v V | al (| Gln | Leu | Glu | Cys | Lys | Gly | Glu | Gly | Asp | Val | Trp | Val | AT 9 | | |
| 205 | : | | | | | 390 | | | | | 395 | | | | | 400 | · | 1248 |
| tgo | ct | t a | igt (| gac | cac | gcg | gtc | ttt | gta | cag | agt | tac | tac | tta | gac | aga | | 1240 |
| Cys | s Le | eu S | Ser 2 | Asp | His | Ala | Val | Phe | Val | GIn | Ser | Tyr | Tyr | Leu | дор | ALC | l | |
| | | | | | 405 | | | | | 410 | | | a+a | + | 415 | aat | | 1296 |
| gaa | go | ct g | ggg | cgt | gca | cct | gga | gat | gct | gtt | cat | aag | Tlo | Tur | Dro | Ser | | 1230 |
| Glı | Al د | La G | | | Ala | Pro | Gly | Asp | Ala | vaı | HIS | ьуѕ | 116 | 430 | 110 | 501 | • | |
| | | | | 420 | | | | ++~ | 425 | car | tat | cat | cga | | atσ | cad | ī | 1344 |
| gca | a ta | at a | ata | aag | gtc | Dho | yaı Acn | ttg Leu | Ara | Gln | Cvs | His | Ara | Gln | Met | Glr | ì | |
| Ala | a Ty | | тте 435 | ьуѕ | Val | PHE | Ash | 440 | mrg | 01 | 0,10 | • | 445 | | | | | |
| | | .~ . | 433 | act | act | aca | caa | gct | σca | gca | qct | gcc | cag | gca | gca | gc | 2 | 1392 |
| Ca | g Co | 19 9 15 7 | ycy ∆la | Δla | Thr | Ala | Gln | Ala | Āla | Āla | Ála | Āla | Gln | Ala | Ala | Ala | a a | |
| | 4.0 | 50 | | | | | 455 | | | | | 460 | | | | | | |
| ati | ~. | ~~ / | gga | aac | atc | cct | ggc | cca | gga | tca | gta | ggt | gga | ata | gct | CC | 3 | 1440 |
| Va. | 1 A. | la | Gly | Asn | Ile | Pro | Gly | Pro | Gly | Ser | Val | . Сту | Gly | Ile | Ala | L L L | | |
| 16 | ς. | | | | | 470 | | | | | 4/5 | | | | | 40 | | 1488 |
| gc | t a | tc a | agt | ctg | tca | gct | gct | gct | gga | att | ggt | gtt. | . gat | gac | CLL | . cg | և ~ | 1400 |
| Al | a I | le : | Ser | Leu | Ser | Ala | Ala | Ala | Gly | TTE | GLy | vaı | . Asp | Asp | 495 | L AL | 9 | |
| | | | | | 485 | | | | | 490 | | | . + | ana | | | + | 1536 |
| cg | c t | ta | tgc | ata | ctc | agg | atg | agt | Dho | grg | Tue | i ggc | , tyy , Trr | Glv | Pro | As | D | |
| Ar | g L | eu | Cys | | Leu | Arg | мет | Ser | 505 | Val | пус | , 01 | + | 510 |) | | | |
| | | | | 500 | | 2+0 | 222 | gaa | 303 | cct | t.ac | : tac | att | gaa | att | ca | С | 1584 |
| ta | C C | ca | aga | cag | Sor | Tle | T.vs | Glu | Thr | Pro | Cvs | rr | , Ile | Glu | Ile | e Hi | s | |
| | | | 515 | | | | | 520 | | | | | 22. | , | | | | |
| ++ | a C | ~ C | caa | acc | ctc | cad | cto | cta | gac | gaa | gta | a ctt | cat | acc | ato | g cc | g | 1632 |
| T.e | n H | is | Ara | Ala | Leu | Gln | Lev | Leu | Asp | Glu | ı Val | L Le | ı His | Thr | : Met | t Pr | 0 | |
| | 5 | 30 | | | | | 535 | , | | | | 541 |) | | | | | 1.000 |
| at | | | ~~~ | 002 | C 2 2 | cct | ++= | gac | tgg | gat | CC | a cc | g gto | gco | aco | c at | g + | 1680 |
| Il | .e Ā | la | Asp | Pro | Gln | Pro | Let | ı Asp | Trp | Asp | Pro | o Pro | o Val | L Alá | ı ın: | r Me 56 | | |
| E / | 1 5 | | | | | 550 |) | | | | 55: | 2 | | | | 50 | | 1728 |
| gt | .g a | ıgc | aag | ggc | gag | gag | , ct | tto | acc | ggg | g gto | g gro | y 000 | 5 al | a T.e. | y y∟ u Va | 1 | _,_, |
| Va | al S | Ser | Lys | Gly | | | ı Leı | ı Phe | Thr | 57(| y va. N | L va | T LT | , 110 | 57 | 5 | - | |
| | | | | | 565 | | | ggc | | J/(| , , ++, | c ad | c at | a t.c | | | ıq | 1776 |
| gá | ag c | ctg | gac | ggc | gac | y y c | ו ממי | n Gly | , cac | T.V | s Ph | e Se | r Va | l Se | r Ğĺ | y Ğ] | ū | |
| | | | | 520 | 1 | | | | 583 |) | | | | 5,5 | 0 | | | |
| | ~~ - | * ~ ~ | aac | rat | acc | ace | c tac | gg(| aac | cto | g ac | c ct | g aa | g tt | c at | c to | jc | 1824 |
| G. | ې تو 1 ته 1 | ,ay :1:: | Glv | Asr | Ala | a Thi | r Tv | r Gly | y Lys | Le | u Th | r Le | u Ly | s Ph | e Il | e C | /S | |
| | | | 505 | | | | | 600 |) | | | | 60 | 3 | | | | 1070 |
| a | cc a | acc | ~~~ | | g cto | g cc | c gt | g cc | c tgg | g cc | c ac | c ct | c gt | g ac | c ac | C C | -g | 1872 |
| ידי די | hr S | Thr | ĞÎv | Lys | Lei | ı Pr | o Va | l Pro | o Trj | o Pr | o Th | r re | u va | 1 Th | r Th | r Le | eu | |
| | | C10 | | | | | 61 | 5 | | | | 62 | ·U | | | | | 1920 |
| a | cc · | tac | ggc | gto | g ca | g tg | c tt | c ag | c cg | c ta | c cc | c ga | c ca | c at | g aa | ig C | ay In | 1920 |
| T | hr ' | Tyr | Gly | v Vai | L Gl | n Cy | s Ph | e Se | r Ar | д Ту | I PI | O AS | р нт | s Me | спу | | 40 | |
| 6 | 25 | | | | | 63 | U | . | ~ | ~ ~ ~ | 63 | | - a+ | c ca | a a= | | | 1968 |
| С | ac | gac | ttc | ; tt | c aa | g tc | c gc | c at | y cc | ب ga | a yy | , | .c yı | Ja | | - 5 | J - | |

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His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg
             645 650
acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag gtg
                                                                   2016
Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val
                               665
aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc atc
                                                                   2064
Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile
                            680
        675
gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac aac
                                                                   2112
Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn
                                           700
                       695
tac aac agc cac aac gtc tat atc atg gcc gac aag cag aac ggc
                                                                    2160
Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly
                                       715
                    710
705
ate aag gtg aac tte aag ate ege cae aac ate gag gae gge age gtg
                                                                    2208
Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val
                725
                                    730
cag etc gec gac cac tac cag cag aac acc eec atc ggc gac ggc eec
                                                                    2256
Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro
                                                   750
                               745
            740
gtg ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg agc
                                                                    2304
Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser
                            760
aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc gtg
                                                                    2352
Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Glu Phe Val
                                            780
                        775
acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag taa
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<212> PRT

<213> Artificial Sequence

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<223> Smad4-EGFP fusion

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140
                    135
Gly Leu Thr Leu Gln Ser Asn Ala Pro Ser Ser Met Met Val Lys Asp
                         155
         150
Glu Tyr Val His Asp Phe Glu Gly Gln Pro Ser Leu Ser Thr Glu Gly
          165
                               170
His Ser Ile Gln Thr Ile Gln His Pro Pro Ser Asn Arg Ala Ser Thr
                            185
Glu Thr Tyr Ser Thr Pro Ala Leu Leu Ala Pro Ser Glu Ser Asn Ala
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                        200
       195
Thr Ser Thr Ala Asn Phe Pro Asn Ile Pro Val Ala Ser Thr Ser Gln
                                     220
                    215
Pro Ala Ser Ile Leu Gly Gly Ser His Ser Glu Gly Leu Leu Gln Ile
                                  235
                230
Ala Ser Gly Pro Gln Pro Gly Gln Gln Gln Asn Gly Phe Thr Gly Gln
                                              255
             245
                               250
Pro Ala Thr Tyr His His Asn Ser Thr Thr Thr Trp Thr Gly Ser Arg
                                 270
                           265
Thr Ala Pro Tyr Thr Pro Asn Leu Pro His His Gln Asn Gly His Leu
              280
      275
Gln His His Pro Pro Met Pro Pro His Pro Gly His Tyr Trp Pro Val
                                      300
         295
His Asn Glu Leu Ala Phe Gln Pro Pro Ile Ser Asn His Pro Ala Pro
       310
                                  315
Glu Tyr Trp Cys Ser Ile Ala Tyr Phe Glu Met Asp Val Gln Val Gly
                                330
             325
Glu Thr Phe Lys Val Pro Ser Ser Cys Pro Ile Val Thr Val Asp Gly
                         345
Tyr Val Asp Pro Ser Gly Gly Asp Arg Phe Cys Leu Gly Gln Leu Ser
                         360
                                          365
       355
Asn Val His Arg Thr Glu Ala Ile Glu Arg Ala Arg Leu His Ile Gly
                     375
                                      380
Lys Gly Val Gln Leu Glu Cys Lys Gly Glu Gly Asp Val Trp Val Arg
                                   395
          390
Cys Leu Ser Asp His Ala Val Phe Val Gln Ser Tyr Tyr Leu Asp Arg
                               410
              405
Glu Ala Gly Arg Ala Pro Gly Asp Ala Val His Lys Ile Tyr Pro Ser
                           425 430
          420
Ala Tyr Ile Lys Val Phe Asp Leu Arg Gln Cys His Arg Gln Met Gln
                                 445
                        440
      435
Gln Gln Ala Ala Thr Ala Gln Ala Ala Ala Ala Gln Ala Ala Ala
            455
Val Ala Gly Asn Ile Pro Gly Pro Gly Ser Val Gly Gly Ile Ala Pro
                                   475
                 470
Ala Ile Ser Leu Ser Ala Ala Ala Gly Ile Gly Val Asp Asp Leu Arg
                                490
              485
Arg Leu Cys Ile Leu Arg Met Ser Phe Val Lys Gly Trp Gly Pro Asp
                             505
Tyr Pro Arg Gln Ser Ile Lys Glu Thr Pro Cys Trp Ile Glu Ile His
                                          525
                         520
Leu His Arg Ala Leu Gln Leu Leu Asp Glu Val Leu His Thr Met Pro
                                       540
                     535
Ile Ala Asp Pro Gln Pro Leu Asp Trp Asp Pro Pro Val Ala Thr Met
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                 550
Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val
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              565
Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu
                           585 590
Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys
                        600
Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu
                                       620
                     615
Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln
                                    635
                  630
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His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg 650 645 Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile 685 680 Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn 695 Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly 710 715 Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val 730 725 Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro 740 745 750 Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser 765 760 Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val 775 780 Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys 790 <210> 78 <211> 3138 <212> DNA <213> Artificial Sequence <220> Stat5-EGFP fusion construct <220> <221> CDS <222> (1)..(3135) <400> 78 atg gcg ggc tgg atc cag gcc cag cag ctg cag gga gac gcg ctg cgc 48 Met Ala Gly Trp Ile Gln Ala Gln Gln Leu Gln Gly Asp Ala Leu Arg 10 cag atg cag gtg ctg tac ggc cag cac ttc ccc atc gag gtc cgg cac 96 Gln Met Gln Val Leu Tyr Gly Gln His Phe Pro Ile Glu Val Arg His 25 30 144 tac ttg gcc cag tgg att gag agc cag cca tgg gat gcc att gac ttg Tyr Leu Ala Gln Trp Ile Glu Ser Gln Pro Trp Asp Ala Ile Asp Leu 40 35 gac aat ccc cag gac aga gcc caa gcc acc cag ctc ctg gag ggc ctg 192 Asp Asn Pro Gln Asp Arg Ala Gln Ala Thr Gln Leu Leu Glu Gly Leu 55 60 240 gtg cag gag ctg cag aag aag gcg gag cac cag gtg ggg gaa gat ggg Val Gln Glu Leu Gln Lys Lys Ala Glu His Gln Val Gly Glu Asp Gly 75 70 288 ttt tta ctg aag atc aag ctg ggg cac tac gcc acg cag ctc cag aaa Phe Leu Leu Lys Ile Lys Leu Gly His Tyr Ala Thr Gln Leu Gln Lys

90

85

| aca Thr | tat Tyr | gac Asp | cgc Arg 100 | tgc Cys | ccc Pro | ctg Leu | gag Glu | ctg Leu 105 | gtc Val | cgc Arg | tgc Cys | atc Ile | cgg Arg 110 | cac His | att Ile | 336 |
|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------|
| ctg Leu | tac Tyr | aat Asn | gaa | cag Gln | agg Arg | ctg Leu | Val | cga | gaa Glu | gcc Ala | aac Asn | Asn | tgc | agc Ser | tct Ser | 384 |
| ccg Pro | gct Ala | 115 ggg Gly | atc Ile | ctg Leu | gtt Val | gac Asp | 120 gcc Ala | atg Met | tcc Ser | cag Gln | aag Lys | 125 cac His | ctt Leu | cag Gln | atc Ile | 432 |
| | 130 | | | | gag | 135 | | | | | 140 | | | | | 480 |
| Asn 145 | Gln | Thr | Phe | Glu | Glu 150 | Leu | Arg | Leu | Val | Thr 155 | Gln | Asp | Thr | Glu | Asn 160 | |
| gag Glu | ctg Leu | aag Lys | aaa Lys | ctg Leu 165 | cag Gln | cag Gln | act Thr | cag Gln | gag Glu 170 | tac Tyr | ttc Phe | atc Ile | atc Ile | cag Gln 175 | tac Tyr | 528 |
| cag Gln | gag Glu | agc Ser | ctg Leu 180 | agg Arg | atc Ile | caa Gln | gct Ala | cag Gln 185 | ttt Phe | gcc Ala | cag Gln | ctg Leu | gcc Ala 190 | cag Gln | ctg Leu | 576 |
| agc Ser | ccc Pro | cag Gln 195 | qaq | cgt Arg | ctg Leu | agc Ser | cgg Arg 200 | gag | acg Thr | gcc Ala | ctc Leu | cag Gln 205 | cag Gln | aag Lys | cag Gln | 624 |
| gtg Val | tct Ser 210 | ctq | gag Glu | gcc Ala | tgg Trp | ttg Leu 215 | cag | cgt Arg | gag Glu | gca Ala | cag Gln 220 | aca | ctg Leu | cag Gln | cag Gln | 672 |
| tac Tyr 225 | cqc | gtg Val | gag Glu | ctg Leu | gcc Ala 230 | gag | aag Lys | cac His | cag Gln | aag Lys 235 | acc | ctg Leu | cag Gln | ctg Leu | ctg Leu 240 | 720 |
| cqq | aag Lys | cag Gln | cag Gln | acc Thr 245 | atc Ile | atc Ile | ctg Leu | gat Asp | gac Asp 250 | gag | ctg Leu | atc Ile | cag Gln | tgg Trp 255 | aag | 768 |
| cgg Arg | cgg Arg | cag Gln | cag Gln 260 | ctg | gcc Ala | ggg Gly | aac Asn | ggc Gly 265 | ggg | ccc Pro | ccc Pro | gag Glu | ggc Gly 270 | agc | ctg Leu | 816 |
| gac Asp | gtg Val | cta Leu 275 | cag | tcc Ser | tgg Trp | tgt Cys | gag Glu 280 | aag | ttg Leu | gcc Ala | gag Glu | atc Ile 285 | atc | tgg Trp | cag Gln | 864 |
| aac Asn | Arg | caq | cag Gln | atc Ile | cgc Arg | agg Arg 295 | gct | gag Glu | cac His | ctc Leu | tgc Cys 300 | cag | cag Gln | ctg Leu | ccc Pro | 912 |
| Ile | 290 ccc Pro | ggc Gly | cca Pro | gtg Val | gag Glu | gag | atg Met | ctg Leu | gcc Ala | gag Glu 315 | gtc | aac Asn | gcc Ala | acc Thr | atc Ile 320 | 960 |
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| cgc Arg | ctg Leu | ctg Leu 355 | Val | ggc Gly | ggg Gly | aag Lys | ctg Leu 360 | aac Asn | gtg Val | cac His | atg Met | aat Asn 365 | ccc Pro | ccc Pro | cag Gln | 1104 |
| gtg Val | aag Lys 370 | gcc Ala | acc | atc Ile | atc Ile | agt Ser 375 | gag | cag | cag Gln | gcc Ala | aag Lys 380 | tct Ser | ctg | ctt Leu | aaa Lys | 1152 |
| Asn | gag Glu | aac | acc Thr | cgc Arg | aac Asn 390 | gag | tgc Cys | agt Ser | ggt Gly | gag Glu 395 | atc Ile | ctg | aac Asn | aac Asn | tgc Cys 400 | 1200 |
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| gag Glu | tcc Ser | gtg Val 435 | aca Thr | gag Glu | gag Glu | Lys | ttc Phe 440 | aca Thr | gtc Val | ctg Leu | ttt Phe | gag Glu 445 | tct Ser | cag Gln | ttc Phe | 1344 |
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| Val | Met | Glu | Val 580 | Leu | aag Lys | Lys | His | His 585 | Lys | Pro | His | Trp | Asn 590 | Asp | GIY | 1824 |
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| Lys | Ala 690 | Val | Asp | Gly | Tyr | Val 695 | Lys | Pro | Gln | Ile | Lys 700 | Gln | . Val | . Val | Pro | 2160 |
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| Met | . Asp | Glr | a Ala | 725 725 | Ser cct | Pro | Ala cat | a Val | . Cys 730 a cto | Pro) ; gat | Glr caç | n Ala ggat | Pro gga | 735 gaa | Asn ttc | 2256 |
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| Asp | Lev | 755 | o Glu | ı Thi | r Met | Asp | 760 | l Ala | a Arç | g His | va. | 1 G1 765 | ı GLı | ı Lev | ı Leu | |

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| gat Asp | cca Pro | ccg Pro | gtc Val | gcc Ala 805 | acc Thr | atg Met | gtg Val | agc Ser | aag Lys 810 | ggc Gly | gag Glu | gag Glu | ctg Leu | ttc Phe 815 | acc Thr | 2448 |
| ggg Gly | Val | Val | Pro 820 | Ile | Leu | Val | Glu | Leu 825 | Asp | Gly | Asp | Val | Asn 830 | Gly | His | 2496 |
| aag Lys | Phe | Ser 835 | Val | Ser | Gly | Glu | Gly 840 | Glu | Gly | Asp | Ala | Thr 845 | Tyr | Gly | Lys | 2544 |
| | Thr 850 | Leu | Lys | Phe | Ile | Cys 855 | Thr | Thr | Gly | Lys | Leu 860 | Pro | Val | Pro | Trp | 2592 |
| ccc Pro 865 | Thr | Leu | Val | Thr | Thr 870 | Leu | Thr | Tyr | Gly | Val 875 | Gln | Cys | Phe | Ser | Arg 880 | 2640 |
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| Gly 945 | His | Lys | ctg Leu | Glu | Tyr 950 | Asn | Tyr | Asn | Ser | His 955 | Asn | Val | Tyr | Ile | Met 960 | 2880 |
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| acc Thr | ccc Pro | atc Ile 995 | Gly | gac Asp | ggc Gly | ccc Pro | Val 100 | Le 0 | u Le | u Pr | o As | p As 10 | n H 05 | is T | ac ctg yr Leu | 3024 |
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| | atg Met 102 | gt Va | c ct l Le | | | u Ph | - | tg a al T | | | la G | | | act Thr | | 3114 |
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Pro Val Val Ile Val His Gly Ser Gln Asp His Asn Ala Thr Ala
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Thr Val Leu Trp Asp Asn Ala Phe Ala Glu Pro Gly Arg Val Pro Phe
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Ala Val Pro Asp Lys Val Leu Trp Pro Gln Leu Cys Glu Ala Leu Asn
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Met Lys Phe Lys Ala Glu Val Gln Ser Asn Arg Gly Leu Thr Lys Glu
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Asp Leu Asp Glu Thr Met Asp Val Ala Arg His Val Glu Glu Leu Leu
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Arg Arg Pro Met Asp Ser Leu Asp Ser Arg Leu Ser Pro Pro Ala Gly
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Lys Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys
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Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp
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Pro Thr Leu Val Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg
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Tyr Pro Asp His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro
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Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn
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Arg Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu
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| Ala As | p Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His 965 970 975 | | | | | | | | | | | |
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| His Me | t Val Leu Leu Glu Phe Val Thr Ala Ala Gly Ile Thr Leu 25 1030 1035 | | | | | | | | | | | |
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| geggae | agageogaag acgggg | |
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| <211> | 30 | |
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| <213> | Artificial Sequence | |
| | | |
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| <212> | DNA | |
| <213> | Artificial Sequence | |
| | | |
| <220> | | |
| <223> | Zap70bottom/-stop Primer | |
| <400> gtgga | 106 tccca ggcacaggca gcctcagcct tc | 32 |

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 Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
                                     10
 gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc
                                                                       96
 Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
                                 25
             20
 gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc
                                                                       144
 Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
                             40
                                                 45
 tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc
                                                                       192
 Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
                         55
                                              60
 ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag
                                                                       240
 Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
                                          75
                      70
 cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag
                                                                       288
 Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                                      90
                  85
  cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag
                                                                       336
  Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
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110

105

| Val | aag Lys | Phe 115 | Glu | Gly | Asp | Thr | Leu 120 | Val . | Asn | Arg | Ile | Glu 125 | Leu | Lys | GIŸ | 384 |
|------------|-------------------|------------|------------|---------------|----------------|----------------|------------|--------------|------------|--------------|--------------|-----------------------|--------------|------------|-------------------|------|
| Ile | gac Asp 130 | Phe | Lys | Glu | Asp | Gly 135 | Asn | Ile | Leu | Gly | His 140 | Lys | Leu | Glu | Tyr | 432 |
| Asn 145 | tac Tyr | Asn | Ser | His | Asn 150 | Val | Tyr | Ile | Met | Ala 155 | Asp | Lys | Gln | Lys | Asn 160 | 480 |
| Gly | atc Ile | Lys | Val | Asn 165 | Phe | Lys | Ile | Arg | His 170 | Asn | Ile | Glu | Asp | G1y 175 | Ser | 528 |
| Val | cag Gln | Leu | Ala 180 | Asp | His | Tyr | Gln | Gln 185 | Asn | Thr | Pro | Ile | Gly 190 | Asp | GIA | 576 |
| Pro | gtg Val | Leu 195 | Leu | Pro | Asp | Asn | His 200 | Tyr | Leu | Ser | Thr | Gln 205 | Ser | Ala | Leu | 624 |
| Ser | aaa Lys 210 | Asp | Pro | Asn | Glu | Lys 215 | Arg | Asp | His | Met | Val 220 | Leu | Leu | Glu | Phe | 672 |
| Val 225 | acc Thr | Ala | Ala | Gly | Ile 230 | Thr | Leu | Gly | Met | Asp 235 | Glu | Leu | Tyr | Lys | Ser 240 | 720 |
| Gly | ctc Leu | Arg | Ser | Arg 245 | Ala | Gln | Ala | Ser | Asn 250 | Ser | Ala | Met | Pro | Asp 255 | Pro | 768 |
| Ala | gcg Ala | His | Leu 260 | Pro | Phe | Phe | Tyr | Gly 265 | Ser | Ile | Ser | Arg | Ala 270 | Glu | Ala | 816 |
| Glu | gag Glu | His 275 | Leu | Lys | Leu | Ala | Gly 280 | Met | Ala | Asp | Gly | Leu 285 | Phe | Leu | Leu | 864 |
| Arg | cag Gln 290 | Cys | Leu | Arg | Ser | Leu 295 | Gly | Gly | Tyr | Val | Leu 300 | Ser | Leu | vai | HIS | 912 |
| Asp | gtg Val | Arg | Phe | His | His 310 | Phe | Pro | Ile | Glu | Arg 315 | Gln | Leu | Asn | Gly | Thr 320 | 960 |
| Tyr | gcc Ala | Ile | Ala | Gly 325 | Gly | Lys | Ala | His | Cys 330 | Gly | Pro | Ala | Glu | Leu 335 | Cys | 1008 |
| Glu | ttc Phe | Tyr | Ser 340 | Arg | Asp | Pro | Asp | Gly 345 | Leu | Pro | Cys | Asn | Leu 350 | Arg | гàг | 1104 |
| Pro | | Asn 355 | a Arg | Pro | Ser | Gly | Leu 360 | Glu | Pro | Gln | Pro | 365 365 | Val | Phe | Asp | 1152 |
| Суа | 370 | Arç | g Asp | Ala | Met | Val 375 | Arg | Asp | туг | Val | . Arg 380 | g Gln) | Thr | rrr | aag Lys | 1200 |
| Let 385 | ı Glü | Gly | y Gli | ı Ala | Let 390 | Glu | Gln | Ala | ı Ile | : Ile 395 | e Sei | : GIn | ı Alâ | Pro | cag Gln 400 | 1248 |
| Va. | l Glı | Ly: | s Lei | ı Il∈ 405 | a Ala | Thr | Thr | Ala | 410 | s Glu) | ı Arç | g Met | : Pro | 415 | | 1296 |
| Hi | s Sei | s Se | r Le | ı Thi O | r Arg | y Glu | ı Glı | 1 Ala 425 | a Glu 5 | ı Arç | J Ly: | s Lei | 1 Ty1 430 | r Sei | g ggg | 1344 |
| gc Al | g caq a Gli | n Th | r As | c ggo p Gl | c aaq y Lys | g tto s Phe | Let 440 | ı Leı | ı agç | g Pro | y cg | g aaq g Lys 445 | s GI1 | ı Gli | g ggc n Gly | 1044 |

| Thr | Tyr 450 | Ala | ctg Leu | Ser | Leu | Ile 455 | Tyr | Gly | Lys | Thr | Val 460 | Tyr | His | Tyr | Leu | 1392 |
|------------|-------------------|------------|-------------------|------------|------------|-------------------|------------|------------|------------|------------|-------------------|------------|------------|------------|------------|------|
| Ile 465 | Ser | Gln | gac Asp | Lys | Ala 470 | Gly | Lys | Tyr | Cys | Ile 475 | Pro | Glu | Gly | Thr | Lys 480 | 1440 |
| Phe | Asp | Thr | ctc Leu | Trp 485 | Gln | Leu | Val | Glu | Tyr 490 | Leu | Lys | Leu | Lys | Ala 495 | Asp | 1488 |
| Gly | Leu | Ile | tac Tyr 500 | Cys | Leu | Lys | Glu | Ala 505 | Cys | Pro | Asn | Ser | Ser 510 | Ala | Ser | 1536 |
| Asn | Ala | Ser 515 | GJ À dàd | Ala | Ala | Ala | Pro 520 | Thr | Leu | Pro | Ala | His 525 | Pro | Ser | Thr | 1584 |
| Leu | Thr 530 | His | cct Pro | Gln | Arg | Arg 535 | Ile | Asp | Thr | Leu | Asn 540 | Ser | Asp | Gly | Tyr | 1632 |
| Thr 545 | Pro | Glu | cca Pro | Ala | Arg 550 | Ile | Thr | Ser | Pro | Asp 555 | Lys | Pro | Arg | Pro | Met 560 | 1680 |
| Pro | Met | Asp | acg Thr | Ser 565 | Val | Tyr | Glu | Ser | Pro 570 | Tyr | Ser | Asp | Pro | Glu 575 | Glu | 1728 |
| Leu | Lys | Asp | aag Lys 580 | Lys | Leu | Phe | Leu | Lys 585 | Arg | Asp | Asn | Leu | Leu 590 | Ile | Ala | 1776 |
| Asp | Ile | Glu 595 | ctt Leu | Gly | Суѕ | Gly | Asn 600 | Phe | Gly | Ser | Val | Arg 605 | Gln | Gly | Val | 1824 |
| Tyr | Arg 610 | Met | cgc Arg | Lys | Lys | Gln 615 | Ile | Asp | Val | Ala | Ile 620 | Lys | Val | Leu | Lys | 1872 |
| Gln 625 | Gly | Thr | gag Glu | Lys | Ala 630 | Asp | Thr | Glu | Glu | Met 635 | Met | Arg | Glu | Ala | Gln 640 | 1920 |
| Ile | Met | His | cag Gln | Leu 645 | Asp | Asn | Pro | Tyr | Ile 650 | Val | Arg | Leu | Ile | Gly 655 | Val | 1968 |
| Cys | Gln | Ala | gag Glu 660 | Ala | Leu | Met | Leu | Val 665 | Met | Glu | Met | Ala | Gly 670 | Gly | Gly | 2016 |
| Pro | Leu | His 675 | | Phe | Leu | Val | Gly 680 | Lys | Arg | Glu | Glu | 11e 685 | Pro | Val | Ser | 2064 |
| Asn | Val 690 | Ala | gag Glu | Leu | Leu | His 695 | Gln | Val | Ser | Met | Gly 700 | Met | Lys | Tyr | Leu | 2112 |
| Glu 705 | Glu | Lys | aac Asn | Phe | Val 710 | His | Arg | Asp | Leu | Ala 715 | Ala | Arg | Asn | Val | Leu 720 | 2160 |
| Leu | Val | Asn | cgg Arg | His 725 | Tyr | Ala | Lys | Ile | Ser 730 | Asp | Phe | Gly | Leu | Ser 735 | Lys | 2208 |
| Āla | Leu | Gly | gcc Ala 740 | Asp | Asp | Ser | Tyr | Tyr 745 | Thr | Ala | Arg | Ser | Ala 750 | Gly | Lys | 2256 |
| Trp | Pro | Leu 755 | Lys | Trp | Tyr | Ala | Pro 760 | Glu | Cys | Ile | Asn | Phe 765 | Arg | Lys | ttc Phe | 2304 |
| tcc Ser | ago Ser 770 | Arg | : agc Ser | gat Asp | gtc Val | tgg Trp 775 | Ser | tat Tyr | Gly | gto Val | acc Thr 780 | Met | tgg Trp | gag Glu | gcc Ala | 2352 |

```
ttg tcc tac ggc cag aag ccc tac aag aag atg aaa ggg ccg gag gtc
                                                                    2400
Leu Ser Tyr Gly Gln Lys Pro Tyr Lys Lys Met Lys Gly Pro Glu Val
                  790
                                        795
                                                                    2448
atg gcc ttc atc gag cag ggc aag cgg atg gag tgc cca cca gag tgt
Met Ala Phe Ile Glu Gln Gly Lys Arg Met Glu Cys Pro Pro Glu Cys
                                    810
               805
cca ccc gaa ctg tac gca ctc atg agt gac tgc tgg atc tac aag tgg
                                                                    2496
Pro Pro Glu Leu Tyr Ala Leu Met Ser Asp Cys Trp Ile Tyr Lys Trp
                                825
           820
gag gat cgc ccc gac ttc ctg acc gtg gag cag cgc atg cga gcc tgt
                                                                    2544
Glu Asp Arg Pro Asp Phe Leu Thr Val Glu Gln Arg Met Arg Ala Cys
                            840
                                               845
        835
                                                                     2592
tac tac agc ctg gcc agc aag gtg gaa ggg ccc cca ggc agc aca cag
Tyr Tyr Ser Leu Ala Ser Lys Val Glu Gly Pro Pro Gly Ser Thr Gln
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                       855
                                                                     2616
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Lys Ala Glu Ala Ala Cys Ala
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Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
                            235
           230
Gly Leu Arg Ser Arg Ala Gln Ala Ser Asn Ser Ala Met Pro Asp Pro
                           250
Ala Ala His Leu Pro Phe Phe Tyr Gly Ser Ile Ser Arg Ala Glu Ala
          260
                             265
Glu Glu His Leu Lys Leu Ala Gly Met Ala Asp Gly Leu Phe Leu Leu
                           280
Arg Gln Cys Leu Arg Ser Leu Gly Gly Tyr Val Leu Ser Leu Val His
                       295
Asp Val Arg Phe His His Phe Pro Ile Glu Arg Gln Leu Asn Gly Thr
                                      315
                   310
Tyr Ala Ile Ala Gly Gly Lys Ala His Cys Gly Pro Ala Glu Leu Cys
                                  330
               325
Glu Phe Tyr Ser Arg Asp Pro Asp Gly Leu Pro Cys Asn Leu Arg Lys
                                               350
                              345
           340
Pro Cys Asn Arg Pro Ser Gly Leu Glu Pro Gln Pro Gly Val Phe Asp
                           360
Cys Leu Arg Asp Ala Met Val Arg Asp Tyr Val Arg Gln Thr Trp Lys
                                          380
                       375
Leu Glu Gly Glu Ala Leu Glu Gln Ala Ile Ile Ser Gln Ala Pro Gln
                                      395
                   390
Val Glu Lys Leu Ile Ala Thr Thr Ala His Glu Arg Met Pro Trp Tyr
                                  410
              405
His Ser Ser Leu Thr Arg Glu Glu Ala Glu Arg Lys Leu Tyr Ser Gly
                                                  430
                               425
           420
Ala Gln Thr Asp Gly Lys Phe Leu Leu Arg Pro Arg Lys Glu Gln Gly
                           440
 Thr Tyr Ala Leu Ser Leu Ile Tyr Gly Lys Thr Val Tyr His Tyr Leu
                                           460
                       455
 Ile Ser Gln Asp Lys Ala Gly Lys Tyr Cys Ile Pro Glu Gly Thr Lys
                                      475
                   470
 Phe Asp Thr Leu Trp Gln Leu Val Glu Tyr Leu Lys Leu Lys Ala Asp
                                   490
               485
 Gly Leu Ile Tyr Cys Leu Lys Glu Ala Cys Pro Asn Ser Ser Ala Ser
                               505
            500
 Asn Ala Ser Gly Ala Ala Ala Pro Thr Leu Pro Ala His Pro Ser Thr
                           520
 Leu Thr His Pro Gln Arg Arg Ile Asp Thr Leu Asn Ser Asp Gly Tyr
                                540
                       535
 Thr Pro Glu Pro Ala Arg Ile Thr Ser Pro Asp Lys Pro Arg Pro Met
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                   550
 Pro Met Asp Thr Ser Val Tyr Glu Ser Pro Tyr Ser Asp Pro Glu Glu
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                                    570
 Leu Lys Asp Lys Lys Leu Phe Leu Lys Arg Asp Asn Leu Leu Ile Ala
                                585
           580
 Asp Ile Glu Leu Gly Cys Gly Asn Phe Gly Ser Val Arg Gln Gly Val
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                            600
 Tyr Arg Met Arg Lys Lys Gln Ile Asp Val Ala Ile Lys Val Leu Lys
                                           620
                        615
 Gln Gly Thr Glu Lys Ala Asp Thr Glu Glu Met Met Arg Glu Ala Gln
                                        635
                    630
 Ile Met His Gln Leu Asp Asn Pro Tyr Ile Val Arg Leu Ile Gly Val
                                    650
                645
 Cys Gln Ala Glu Ala Leu Met Leu Val Met Glu Met Ala Gly Gly
                                                   670
                               665
 Pro Leu His Lys Phe Leu Val Gly Lys Arg Glu Glu Ile Pro Val Ser
                                                685
                            680
  Asn Val Ala Glu Leu Leu His Gln Val Ser Met Gly Met Lys Tyr Leu
                                            700
                        695
  Glu Glu Lys Asn Phe Val His Arg Asp Leu Ala Ala Arg Asn Val Leu
                                        715
                     710
  Leu Val Asn Arg His Tyr Ala Lys Ile Ser Asp Phe Gly Leu Ser Lys
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730
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Ala Leu Gly Ala Asp Asp Ser Tyr Tyr Thr Ala Arg Ser Ala Gly Lys
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           740
Trp Pro Leu Lys Trp Tyr Ala Pro Glu Cys Ile Asn Phe Arg Lys Phe
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                            760
        755
Ser Ser Arg Ser Asp Val Trp Ser Tyr Gly Val Thr Met Trp Glu Ala
                                           780
                       775
Leu Ser Tyr Gly Gln Lys Pro Tyr Lys Lys Met Lys Gly Pro Glu Val
                                        795
                   790
Met Ala Phe Ile Glu Gln Gly Lys Arg Met Glu Cys Pro Pro Glu Cys
                                    810
               805
Pro Pro Glu Leu Tyr Ala Leu Met Ser Asp Cys Trp Ile Tyr Lys Trp
                                825
           820
Glu Asp Arg Pro Asp Phe Leu Thr Val Glu Gln Arg Met Arg Ala Cys
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        835
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Lys Ala Glu Ala Ala Cys Ala
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                                     10
 cgt gcc gag gcc gag gag cac ctg aag ctg gcg ggc atg gcg gac ggg
                                                                       96
 Arg Ala Glu Ala Glu Glu His Leu Lys Leu Ala Gly Met Ala Asp Gly
                                 25
             20
 ctc ttc ctg ctg cgc cag tgc ctg cgc tcg ctg ggc ggc tat gtg ctg
                                                                       144
 Leu Phe Leu Leu Arg Gln Cys Leu Arg Ser Leu Gly Gly Tyr Val Leu
                                                 45
  tcg ctc gtg cac gat gtg cgc ttc cac cac ttt ccc atc gag cgc cag
                                                                       192
  Ser Leu Val His Asp Val Arg Phe His His Phe Pro Ile Glu Arg Gln
                                              60
                         55
  ctc aac ggc acc tac gcc att gcc ggc ggc aaa gcg cac tgt gga ccg
                                                                       240
  Leu Asn Gly Thr Tyr Ala Ile Ala Gly Gly Lys Ala His Cys Gly Pro
                                          75
                      70
  gca gag etc tgc gag ttc tac tcg cgc gac ecc gac ggg ctg ecc tgc
                                                                       288
  Ala Glu Leu Cys Glu Phe Tyr Ser Arg Asp Pro Asp Gly Leu Pro Cys
                                      90
                 8.5
  aac ctg cgc aag ccg tgc aac cgg ccg tcg ggc ctc gag ccg cag ccg
                                                                       336
```

| | | | | | | | | | | | | | _ | | | |
|------------|-------------------|-------------------|--------------------|----------------|-------------------|-------------------|-------------------|--------------------|--------------|-------------------|--------------|-------------------|--------------------|------------|-----------------------|------|
| | | | 100 | | | | | Pro 105 | | | | | TIO | | | 204 |
| ggg Gly | gtc Val | ttc Phe 115 | gac Asp | tgc Cys | ctg Leu | cga Arg | gac Asp 120 | gcc Ala | atg Met | gtg Val | cgt Arg | gac Asp 125 | tac Tyr | gtg Val | cgc Arg | 384 |
| Gln | Thr | tgg Trp | Lys | Leu | Glu | Gly 135 | gag Glu | gcc Ala | Leu | GIU | 140 | Ата | 116 | 116 | Ser | 432 |
| Gln | gcc Ala | Pro | Gln | Val | Glu 150 | Lys | Leu | att Ile | Ala | Thr 155 | Thr | Ата | HIS | GIU | 160 | 480 |
| atg Met | Pro | Trp | Tyr | His 165 | Ser | Ser | Leu | acg Thr | Arg 170 | GIu | GIU | Ата | GIU | 175 | тур | 528 |
| Leu | Tyr | Ser | Gly 180 | Ala | Gln | Thr | Asp | ggc Gly 185 | Lys | Phe | Leu | ьeu | 190 | PIO | Arg | 576 |
| Lys | Glu | Gln 195 | Gly | Thr | Tyr | Ala | Leu 200 | tcc Ser | Leu | IIe | Tyr | 205 | гÀг | THE | Val | 624 |
| Tyr | His | tac Tyr | Leu | Ile | Ser | Gln 215 | Asp | aag Lys | Ala | Gly | Lys 220 | Tyr | Cys | ire | PIO | 672 |
| Glu 225 | ggc Gly | Thr | Lys | Phe | Asp 230 | Thr | Leu | tgg Trp | Gin | Leu 235 | vaı | GIU | Tyr | ьец | 240 | 720 |
| ctg Leu | Lys | Ala | Asp | Gly 245 | ctc Leu | Ile | Tyr | tgc Cys | Leu 250 | гàз | GIU | АІА | Cys | 255 | ASII | 768 |
| agc Ser | agt Ser | gcc Ala | agc Ser 260 | aac | gcc Ala | tca Ser | ggg Gly | gct Ala 265 | gct Ala | gct Ala | ccc | aca Thr | ctc Leu 270 | FIO | gcc Ala | 816 |
| cac His | cca Pro | tcc Ser 275 | acg Thr | ttg Leu | act Thr | cat His | cct Pro 280 | cag Gln | aga Arg | cga Arg | ato | gac Asp 285 | Thr | ctc Leu | aac Asn | 864 |
| tca Ser | gat Asp 290 | gga Gly | tac | acc Thr | cct Pro | gag Glu 295 | Pro | gca Ala | cgc Arg | ata Ile | acg Thr | Ser | cca Pro | gac Asp | aaa Lys | 912 |
| cco Pro | cgg Arg | | atg Met | ccc Pro | atg Met 310 | gac Asp | acq | agc Ser | gtg Val | tat Tyr 315 | GIU | g ago 1 Ser | Pro | tac Tyr | s agc Ser 320 | 960 |
| gac Asp | cca Pro | Glu | ı Glu | 1 Leu 325 | Lys | Asp | Lys | . Lys | Leu 330 | ı Phe) | e re | л гуз | s Arc | 335 | | 1008 |
| Let | ı Leı | 1 Ile | • Ala 340 | gac Asp | att Ile | Glu | ı Lev | ı Gly 345 | r Cys i | s GI | / Ası | n Pne | 350 | , sei | a gtg r Val | 1056 |
| Are | g Glı | n Gly | c gto y Val | g tac L Tyi | r Arç | g Met | 360 | g Lys O | з Гу: | s GII | J 110 | e Asj 36 | pva. 5 | r Are | a Ile | 1104 |
| Lу | s Vai | g cto | g aaq u Ly: | s Glı | n Gly | Th: 37! | r Gli 5 | u Lys | s Ala | a As | 9 Th 38 | 0 0 | u GI | и ме | g atg t Met | 1152 |
| Ar | c ga g Gl | g gc u Al | a Gl: | n Il | e Met | g cad t Hi: | c ca s Gl | n Lei | ı As | p As: 39 | n Pr 5 | о ту | I II. | e va | g cgg l Arg 400 | 1200 |
| Le | c at u Il | e Gl | y Va | l Cy 40 | c cad s Gl | g gc | a Gl | u Al | а Le 41 | и ме 0 | т ге | u va | т ме | 41 | | 1248 |
| gc Al | t gg a Gl | g gg y Gl | c gg y Gl 42 | g cc y Pr | a ct | g ca u Hi | c aa s Ly | g tt s Ph 42 | c ct e Le | a at | c gg 1 G1 | c aa y Ly | g ag s Ar 43 | g GI | g gag u Glu | 1296 |
| at | .c cc | t gt | g ag | c aa | t gt | g gc | c ga | | | g ca | c ca | ıg gt | g to | c at | g ggg | 1344 |

| Ile | Pro | Val 435 | Ser | Asn | Val | | Glu 440 | Leu | Leu | His | Gln | Val 445 | Ser | Met | Gly | |
|-------------------|-------------------|-------------------|----------------------|-----------------------|-------------------|-------------------|---------------------|----------------------|-------------------|-------------------|-------------------|-----------------------|--------------------|----------------------|---------------------|------|
| atg Met | aag Lys | tac | ctg Leu | gag Glu | Glu | aag Lys | aac | ttt Phe | gtg Val | cac His | Arg | gac Asp | ctg Leu | gcg Ala | gcc Ala | 1392 |
| cgc | 450 aac | gtc | ctg | ctg | att | 455 aac Asn | cgg Ara | cac His | tac Tvr | gcc Ala | 460 aag Lvs | atc Ile | agc Ser | gac Asp | ttt Phe | 1440 |
| 465 | | | | | 470 | | | | | 475 | | tac | | | 480 | 1488 |
| Gly | Leu | Ser | Lys | Ala 485 | Leu | Gly | Ala | Asp | Asp 490 | Ser | Tyr | Tyr | Thr | 495 | Arg | 1526 |
| tca Ser | gca Ala | ggg Gly | aag Lys 500 | tgg Trp | ccg Pro | ctc Leu | aag Lys | tgg Trp 505 | tac Tyr | gca Ala | Pro | gaa Glu | tgc Cys 510 | Ile | aac Asn | 1536 |
| ttc Phe | cgc Arg | aag Lys 515 | ttc | tcc Ser | agc Ser | cgc Arg | agc Ser 520 | gat Asp | gtc Val | tgg Trp | agc Ser | tat Tyr 525 | Gly | gtc Val | acc Thr | 1584 |
| atg Met | tgg Trp | gag | gcc Ala | ttg Leu | tcc Ser | Tyr | aac | cag Gln | aag Lys | ccc Pro | Tyr | aag Lys | aag Lys | atg Met | aaa Lys | 1632 |
| ggg Gly | 530 ccg Pro | gag Glu | gtc Val | atg Met | gcc Ala | 535 ttc Phe | atc Ile | gag Glu | cag Gln | Gly | 540 aag Lys | cgg Arg | atg Met | gag Glu | Cys | 1680 |
| 545 cca | cca | gag | tgt | cca | 550 ccc | gaa | ctg | tac | gca | 555 ctc | atg | agt | gac | tgc Cvs | 560 tgg | 1728 |
| | | | | 565 | | | | | 570 | | | Ser | | 575 | | 1776 |
| Ile | Tyr | Lys | Trp 580 | Glu | Asp | Arg | Pro | Asp 585 | Phe | Leu | Thr | Val | 590 | GIn | Arg | 1004 |
| atg Met | cga Arg | gcc Ala 595 | Cys | tac Tyr | tac Tyr | agc Ser | ctg Leu 600 | gcc Ala | agc Ser | aag Lys | gtg Val | gaa Glu 605 | Gly | ccc Pro | cca Pro | 1824 |
| ggc Gly | agc Ser 610 | aca | cag | aag Lys | gct Ala | gag Glu 615 | gct Ala | gcc Ala | tgt Cys | gcc Ala | tgg Trp 620 | gat Asp | cca Pro | ccg Pro | gtc Val | 1872 |
| Ala | acc Thr | atg Met | gtg Val | agc Ser | aag Lys 630 | aac | gag Glu | gag Glu | ctg Leu | ttc Phe 635 | Thr | ggg | gtg Val | gtg Val | ccc Pro 640 | 1920 |
| 625 atc Ile | cta | gtc Val | gag Glu | Leu | gac Asp | ggc Gly | gac Asp | gta Val | Asn | ggc Gly | cac | aag Lys | ttc Phe | ago Ser 655 | var | 1968 |
| tcc Ser | ggc Gly | gag Glu | ı Gly | 645 gag Glu | aac | gat Asp | gcc Ala | Thr | Tyr | ggc | aag Lys | ctg Leu | Thr | ctg Leu | aag | 2016 |
| tto Phe | ato | tgc Cys | 660 acc Thr | acc | ggc Gly | aag Lys | ctg Leu | 665 ccc Pro | gtg | ccc Pro | tgç Trp | ccc Pro | 670 acc Thr | cto | gtg Val | 2064 |
| 200 | . acc | 675 | o racc | : tac | aac | ata | 680 cad | tgo | : ttc | ago | cgc | 685 tac | ccc | gad | cac | 2112 |
| | 690 |) | | | | 695 | • | | | | 700 |) | | | His | 2160 |
| Met | Lys 5 | s Glr | n His | s Asp | Phe 710 | Ph∈ | . Lys | Sei | : Ala | Met 715 | : Pro | o Glu | ı Gly | y Tyl | 720 | 0000 |
| ca Gl: | g gaq n Glu | g cgo | c acc | c ato r Ile 725 | e Phe | tto Phe | aaq E Lys | g gad s Asp | gad Asp 730 | o Gl | c aac y Asi | c tac n Tyr | Ly | g aco s Th: 73 | c cgc r Arg 5 | 2208 |
| gc Al | c gaç a Glı | g gto ı Va | g aaq 1 Ly: 74 | g tto s Pho | gac | g ggo u Gly | gad Ası | 2 acc 5 Th: 74 | r Le | g gto ı Va | g aa l As: | c cgo n Aro | ate g Ile 75 | e GI | g ctg u Leu | 2256 |
| aa Ly | g gg s Gl | y Il | c ga e As | c tte | c aaq e Lys | g gaq s Glu | g gad Asp 760 | gg Gl | c aa | c ato | c ct e Le | g ggg u Gly 769 | у ні | c aa s Ly | g ctg s Leu | 2304 |
| ga | g ta | 75 c aa | о c ta | c aa | c ago | c ca | | | c ta | t at | c at | | | c aa | g cag | 2352 |

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Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln
 770 775
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                                                                   2400
Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp
                   790
                                       795
ggc agc gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc
                                                                   2448
Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly
                                   810
                805
gac ggc ccc gtg ctg ctc ccc gac aac cac tac ctg agc acc cag tcc
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Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser
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                               825
           820
gee etg age aaa gae eee aae gag aag ege gat eae atg gte etg etg
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Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu
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                                               845
                                                                   2592
gag ttc gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac
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                                                45
Ser Leu Val His Asp Val Arg Phe His His Phe Pro Ile Glu Arg Gln
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Leu Asn Gly Thr Tyr Ala Ile Ala Gly Gly Lys Ala His Cys Gly Pro
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 Ala Glu Leu Cys Glu Phe Tyr Ser Arg Asp Pro Asp Gly Leu Pro Cys
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 Asn Leu Arg Lys Pro Cys Asn Arg Pro Ser Gly Leu Glu Pro Gln Pro
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 Gly Val Phe Asp Cys Leu Arg Asp Ala Met Val Arg Asp Tyr Val Arg
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 Gln Thr Trp Lys Leu Glu Gly Glu Ala Leu Glu Gln Ala Ile Ile Ser
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 Gln Ala Pro Gln Val Glu Lys Leu Ile Ala Thr Thr Ala His Glu Arg
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 Met Pro Trp Tyr His Ser Ser Leu Thr Arg Glu Glu Ala Glu Arg Lys
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 Leu Tyr Ser Gly Ala Gln Thr Asp Gly Lys Phe Leu Leu Arg Pro Arg
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                                                    190
 Lys Glu Gln Gly Thr Tyr Ala Leu Ser Leu Ile Tyr Gly Lys Thr Val
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Tyr His Tyr Leu Ile Ser Gln Asp Lys Ala Gly Lys Tyr Cys Ile Pro
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Glu Gly Thr Lys Phe Asp Thr Leu Trp Gln Leu Val Glu Tyr Leu Lys
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Leu Lys Ala Asp Gly Leu Ile Tyr Cys Leu Lys Glu Ala Cys Pro Asn
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Ser Asp Gly Tyr Thr Pro Glu Pro Ala Arg Ile Thr Ser Pro Asp Lys
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Pro Arg Pro Met Pro Met Asp Thr Ser Val Tyr Glu Ser Pro Tyr Ser
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Asp Pro Glu Glu Leu Lys Asp Lys Lys Leu Phe Leu Lys Arg Asp Asn
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Arg Gln Gly Val Tyr Arg Met Arg Lys Lys Gln Ile Asp Val Ala Ile
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Lys Val Leu Lys Gln Gly Thr Glu Lys Ala Asp Thr Glu Glu Met Met
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Arg Glu Ala Gln Ile Met His Gln Leu Asp Asn Pro Tyr Ile Val Arg
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Leu Ile Gly Val Cys Gln Ala Glu Ala Leu Met Leu Val Met Glu Met
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Ala Gly Gly Gly Pro Leu His Lys Phe Leu Val Gly Lys Arg Glu Glu
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Ile Pro Val Ser Asn Val Ala Glu Leu Leu His Gln Val Ser Met Gly
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Met Lys Tyr Leu Glu Glu Lys Asn Phe Val His Arg Asp Leu Ala Ala
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Gly Leu Ser Lys Ala Leu Gly Ala Asp Asp Ser Tyr Tyr Thr Ala Arg
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Phe Arg Lys Phe Ser Ser Arg Ser Asp Val Trp Ser Tyr Gly Val Thr
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Met Trp Glu Ala Leu Ser Tyr Gly Gln Lys Pro Tyr Lys Lys Met Lys
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Gly Pro Glu Val Met Ala Phe Ile Glu Gln Gly Lys Arg Met Glu Cys
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Ile Tyr Lys Trp Glu Asp Arg Pro Asp Phe Leu Thr Val Glu Gln Arg
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Met Arg Ala Cys Tyr Tyr Ser Leu Ala Ser Lys Val Glu Gly Pro Pro
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Gly Ser Thr Gln Lys Ala Glu Ala Ala Cys Ala Trp Asp Pro Pro Val
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Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro
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Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val
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                                   650
Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys
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            660
Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val
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 Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His
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                        695
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Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val
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Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg
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Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu
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Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu
                            760
                                                765
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Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln
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                                            780
Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp
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                                        795
Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly
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                                    810
Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser
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Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu
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                                                                       96
gtt gtg tac aaa gcc aga aac aag ttg acg gga gag gtg gtg gcg ctt
Val Val Tyr Lys Ala Arg Asn Lys Leu Thr Gly Glu Val Val Ala Leu
            20
                                25
                                                                      144
aag aaa atc cgc ctg gac act gag act gag ggt gtg ccc agt act gcc
Lys Lys Ile Arg Leu Asp Thr Glu Thr Glu Gly Val Pro Ser Thr Ala
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atc cga gag atc tct ctg ctt aag gag ctt aac cat cct aat att gtc
                                                                      192
Ile Arg Glu Ile Ser Leu Leu Lys Glu Leu Asn His Pro Asn Ile Val
    50
                        55
aag ctg ctg gat gtc att cac aca gaa aat aaa ctc tac ctg gtt ttt
                                                                      240
Lys Leu Leu Asp Val Ile His Thr Glu Asn Lys Leu Tyr Leu Val Phe
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                                        75
gaa ttt ctg cac caa gat ctc aag aaa ttc atg gat gcc tct gct ctc
                                                                      288
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| Glu | Phe | Leu | His | Gln 85 | Asp | Leu | Lys | Lys | Phe | Met | Asp | Ala | Ser | Ala 95 | Leu | |
|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------|
| act Thr | ggc Gly | att Ile | cct Pro 100 | ctt | ccc Pro | ctc Leu | atc Ile | aag Lys 105 | agc Ser | tat Tyr | ctg Leu | ttc Phe | cag Gln 110 | ctg Leu | ctc Leu | 336 |
| cag Gln | ggc Gly | cta Leu 115 | gct Ala | ttc Phe | tgc Cys | cat His | tct Ser 120 | cat | cgg Arg | gtc Val | ctc Leu | cac His 125 | cga | gac Asp | ctt Leu | 384 |
| aaa Lys | cct Pro 130 | caq | aat Asn | ctg Leu | ctt Leu | att Ile 135 | aac | aca Thr | gag Glu | ggg Gly | gcc Ala 140 | atc | aag Lys | cta Leu | gca Ala | 432 |
| gac Asp 145 | ttt | gga Gly | cta Leu | gcc Ala | aga Arg 150 | gct Ala | ttt Phe | gga Gly | gtc Val | cct Pro 155 | gtt Val | cgt Arg | act Thr | tac Tyr | acc Thr 160 | 480 |
| cat | gag Glu | gtg Val | gtg Val | acc Thr 165 | ctg Leu | tgg Trp | tac Tyr | cga Arg | gct Ala 170 | cct Pro | gaa Glu | atc Ile | ctc Leu | ctg Leu 175 | ggc Gly | 528 |
| Ser | Lys | Tyr | tat Tyr 180 | Ser | Thr | Ala | Val | Asp 185 | Ile | Trp | Ser | Leu | Gly 190 | Cys | Ile | 576 |
| ttt Phe | gct Ala | gag Glu 195 | atg Met | gtg Val | act Thr | cgc Arg | cgg Arg 200 | gcc Ala | ctg Leu | ttc Phe | cct Pro | gga Gly 205 | gat Asp | tct Ser | gag Glu | 624 |
| att Ile | gac Asp 210 | caq | ctc Leu | ttc Phe | cgg Arg | atc Ile 215 | ttt Phe | cgg Arg | act Thr | ctg Leu | ggg Gly 220 | acc Thr | cca Pro | gat Asp | gag Glu | 672 |
| gtg Val 225 | ata | tgg Trp | cca Pro | gga Gly | gtt Val 230 | act | tct Ser | atg Met | cct Pro | gat Asp 235 | tac Tyr | aag Lys | cca Pro | agt Ser | ttc Phe 240 | 720 |
| ccc | aag Lys | tgg Trp | gcc Ala | cgg Arg 245 | caa | gat Asp | ttt Phe | agt Ser | aaa Lys 250 | gtt Val | gta Val | cct Pro | ccc Pro | ctg Leu 255 | gat Asp | 768 |
| gaa Glu | gat Asp | gga Gly | cgg Arg 260 | agc Ser | ttg Leu | tta Leu | tcg Ser | caa Gln 265 | atg Met | ctg Leu | cac His | tac Tyr | gac Asp 270 | cct Pro | aac Asn | 816 |
| aag Lys | cgg Arg | att Ile 275 | tcg Ser | gcc Ala | aag Lys | gca Ala | gcc Ala 280 | ctg Leu | gct Ala | cac His | cct Pro | ttc Phe 285 | ttc Phe | cag Gln | gat Asp | 864 |
| gtg Val | acc Thr 290 | aag Lys | cca Pro | gta Val | ccc Pro | cat His 295 | ctt Leu | cga Arg | ctc Leu | tgg Trp | gat Asp 300 | cca Pro | ccg Pro | gtc Val | gcc Ala | 912 |
| Thr 305 | Met | Val | agc Ser | Lys | Gly 310 | Glu | Glu | Leu | Phe | Thr 315 | Gly | Val | Val | Pro | 11e 320 | 960 |
| ctg Leu | Val | Glu | ctg Leu | Asp 325 | Gly | Asp | Val | Asn | Gly 330 | His | Lys | Phe | Ser | Val 335 | Ser | 1008 |
| Gly | Glu | Gly | gag Glu 340 | Gly | Asp | Ala | Thr | Tyr 345 | Gly | Lys | Leu | Thr | Leu 350 | Lys | Phe | 1056 |
| Ile | Cys | Thr 355 | acc Thr | Gly | Lys | Leu | Pro 360 | Val | Pro | Trp | Pro | Thr 365 | Leu | Val | Thr | 1104 |
| Thr | Leu 370 | Thr | tac Tyr | Gly | Val | Gln 375 | Cys | : Phe | Ser | Arg | Туг 380 | Pro |) Asp | His | Met | 1152 |
| Lys 385 | Gln | His | a Asp | Phe | Phe 390 | Lys | Ser | Ala | Met | Pro 395 | Glu S | ı Gly | у Туг | : Val | cag Gln 400 | 1200 |
| gac | cac | aco Thi | ato Ile | ttc Phe 405 | Phe | aag Lys | gac | gac Asp | ggc Gl ₂ 410 | / Asr | tac Tyr | aaq Lys | g acc | cgc Arg 415 | gcc Ala | 1248 |
| gag | g gtg | g aaq | g tto | | | gac | aco | c ctg | gto | g aac | c cgc | ato | c gag | g cto | g aag | 1296 |

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Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys
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Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu
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                                               445
tac aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag
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Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys
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                                                                    1440
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Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly
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age gtg cag etc gec gac cae tae cag cag aac ace eec ate gge gae
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Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp
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gge ecc gtg etg etg ecc gae aac eac tac etg age acc eag tee gee
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Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala
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Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu
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 Ile Arg Glu Ile Ser Leu Leu Lys Glu Leu Asn His Pro Asn Ile Val
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55

135

70

150

100

115

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Thr Gly Ile Pro Leu Pro Leu Ile Lys Ser Tyr Leu Phe Gln Leu Leu

Gln Gly Leu Ala Phe Cys His Ser His Arg Val Leu His Arg Asp Leu 120

Lys Pro Gln Asn Leu Leu Ile Asn Thr Glu Gly Ala Ile Lys Leu Ala

Asp Phe Gly Leu Ala Arg Ala Phe Gly Val Pro Val Arg Thr Tyr Thr

His Glu Val Val Thr Leu Trp Tyr Arg Ala Pro Glu Ile Leu Leu Gly

105

155

75

140

110

90

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Ile Asp Gln Leu Phe Arg Ile Phe Arg Thr Leu Gly Thr Pro Asp Glu
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                                         220
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Val Val Trp Pro Gly Val Thr Ser Met Pro Asp Tyr Lys Pro Ser Phe
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                                     235
Pro Lys Trp Ala Arg Gln Asp Phe Ser Lys Val Val Pro Pro Leu Asp
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              245
Glu Asp Gly Arg Ser Leu Leu Ser Gln Met Leu His Tyr Asp Pro Asn
                              265
                                                 270
Lys Arg Ile Ser Ala Lys Ala Ala Leu Ala His Pro Phe Phe Gln Asp
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Val Thr Lys Pro Val Pro His Leu Arg Leu Trp Asp Pro Pro Val Ala
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Thr Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile
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Leu Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser
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Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe
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Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr
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Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln
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Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys
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Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly
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| | Val | | | | | | | | | | | | | | | |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | | |
| | gag | | | | | | | | | | | | | | | 96 |
| Val | Glu | Leu | | Gly | Asp | Val | Asn | _ | His | Lys | Phe | Ser | | Ser | Gly | |
| | | | 20 | | | | | 25 | | | | | 30 | | | 144 |
| | ggc | | | | | | | | | | | | | | | 144 |
| GIU | Gly | 35 | GTĀ | Asp | Ala | THE | 1yr 40 | сту | туѕ | ьец | 1111 | ьеи 45 | гуу | rne | 116 | |
| tac | acc | | aac | aan | cta | ccc | | CCC | taa | CCC | acc | | ata | acc | acc | 192 |
| | Thr | | | | | | | | | | | | | | | 172 |
| 0,70 | 50 | | 0.1 | 210 | | 55 | | | | | 60 | | | | | |
| ctg | acc | tac | ggc | gtg | cag | tgc | ttc | agc | cgc | tac | ccc | gac | cac | atg | aag | 240 |
| Leu | Thr | Tyr | Ğly | Val | Gln | Cys | Phe | Ser | Arg | Tyr | Pro | Asp | His | Met | Lys | |
| 65 | | | | | 70 | | | | | 75 | | | | | 80 | |
| | cac | | | | | | | | | | | | | | | 288 |
| Gln | His | Asp | Phe | | Lys | Ser | Ala | Met | | Glu | Gly | Tyr | Val | | Glu | |
| | | | | 85 | | | | | 90 | | | | | 95 | | 226 |
| | acc | | | | | | | | | | | | | | | 336 |
| Arg | Thr | тте | 100 | Pne | ьуѕ | Asp | ASP | 105 | ASII | тйт | ьуѕ | TIIT | 110 | нта | GLU | |
| ata | aag | ttc | | aac | aac | acc | cta | | aac | cac | atc | ααα | | ааσ | aac | 384 |
| | Lys | | | | | | | | | | | | | | | |
| | -1- | 115 | | 1 | - | | 120 | | | | | 125 | | - | - | |
| atc | gac | ttc | aag | gag | gac | ggc | aac | atc | ctg | ggg | cac | aag | ctg | gag | tac | 432 |
| Ile | Asp | Phe | Lys | Glu | Asp | Gly | Asn | Ile | Leu | Gly | His | Lys | Leu | Glu | Tyr | |
| | 130 | | | | | 135 | | | | | 140 | | | | | |
| | tac | | | | | | | | | | | | | | | 480 |
| | Tyr | Asn | Ser | His | | Val | Tyr | Ile | Met | | Asp | Lys | GIn | ьуs | | |
| 145 | atc | | | | 150 | ~ | .+. | ~~~ | ~~~ | 155 | ata | ~~~ | a20 | ~~~ | 160 | 528 |
| Glv | Ile | Tue | y Ly Val | Agn | Phe | Lvs | Tle | Ara | His | Asn | Tle | Glu | Asp | Glv | Ser | 520 |
| GLY | 116 | цуз | Val | 165 | 1110 | цуз | 110 | 111.9 | 170 | 11011 | 110 | 014 | пор | 175 | 001 | |
| ata | cag | ctc | acc | | cac | tac | caq | caq | | acc | ccc | atc | ggc | gac | ggc | 576 |
| ναί | Gln | Leu | Āla | Ásp | His | Tyr | Gln | Gln | Asn | Thr | Pro | Ile | Gly | Asp | Gly | |
| | | | 180 | | | | | 185 | | | | | 190 | | | |
| CCC | gtg | ctg | ctg | ccc | gac | aac | cac | tac | ctg | agc | acc | cag | tcc | gcc | ctg | 624 |
| Pro | Val | | Leu | Pro | Asp | Asn | | Tyr | Leu | Ser | Thr | | Ser | Ala | Leu | |
| | | 195 | | | | | 200 | | | | | 205 | -+- | ~~~ | ++- | 672 |
| agc | aaa | gac | CCC | aac | gag | aag | cgc | gat | Cac | Mot | gre | CLG | Tou | Glu | Pho | 672 |
| ser | Lys 210 | Asp | Pro | ASI | GIU | шуS 215 | Arg | Asp | нтѕ | мес | 220 | reu | rea | GIU | FILE | |
| ata | acc | acc | acc | aaa | atc | | ctc | aac | atα | gac | | cta | tac | aaσ | tcc | 720 |
| | Thr | | | | | | | | | | | | | | | |
| 225 | | | | 2 | 230 | | | _ | | 235 | | | - | - | 240 | |
| gga | ctc | aga | tct | cga | gcc | atg | gag | aac | ttc | caa | aag | gtg | gaa | aag | atc | 768 |
| Gly | Leu | Arg | Ser | Arg | Ala | Met | Glu | Asn | Phe | Gln | Lys | Val | Glu | | Ile | |
| | | | | 245 | | | | | 250 | | | | | 255 | | |
| gga | gag | ggc | acg | tac | gga | gtt | gtg | tac | aaa | gcc | aga | aac | aag | ttg | acg | 816 |
| Gly | Glu | Gly | | Tyr | Gly | Va⊥ | val | | гуѕ | Ala | Arg | ASN | | ьeu | Tnr | |
| ~~~ | ~~~ | a+ - | 260 ata | ~~~ | ~++ | 22~ | 222 | 265 | ~~~ | c+~ | a a c | a c + | 270 | act | nan | 864 |
| | gag Glu | | | | | | | | | | | | | | | 400 |
| υ±y | O _T u | 275 | • 44 | | Lcu | 2.33 | 280 | | 9 | | | 285 | | | | |
| | | _ , 0 | | | | | | | | | | | | | | |

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Gly Val Pro Ser Thr Ala Ile Arg Glu Ile Ser Leu Leu Lys Glu Leu
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                                            300
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                                                                      960
Asn His Pro Asn Ile Val Lys Leu Leu Asp Val Ile His Thr Glu Asn
                    310
                                                                     1008
aaa ctc tac ctg qtt ttt qaa ttt ctg cac caa gat ctc aag aaa ttc
Lys Leu Tyr Leu Val Phe Glu Phe Leu His Gln Asp Leu Lys Lys Phe
                                    330
                325
atg gat gcc tct gct ctc act ggc att cct ctt ccc ctc atc aag agc
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Met Asp Ala Ser Ala Leu Thr Gly Ile Pro Leu Pro Leu Ile Lys Ser
                                345
tat ctg ttc cag ctg ctc cag ggc cta gct ttc tgc cat tct cat cgg
                                                                     1104
Tyr Leu Phe Gln Leu Leu Gln Gly Leu Ala Phe Cys His Ser His Arg
       355
                           360
                                                                     1152
gtc ctc cac cga gac ctt aaa cct cag aat ctg ctt att aac aca gag
Val Leu His Arg Asp Leu Lys Pro Gln Asn Leu Leu Ile Asn Thr Glu
                       375
                                            380
                                                                     1200
ggg gcc atc aag cta gca gac ttt gga cta gcc aga gct ttt gga gtc
Gly Ala Ile Lys Leu Ala Asp Phe Gly Leu Ala Arg Ala Phe Gly Val
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cct gtt cgt act tac acc cat gag gtg gtg acc ctg tgg tac cga gct
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Pro Val Arg Thr Tyr Thr His Glu Val Val Thr Leu Trp Tyr Arg Ala
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                                    410
cct gaa atc ctc ctg ggc tcg aaa tat tat tcc aca gct gtg gac atc
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Pro Glu Ile Leu Leu Gly Ser Lys Tyr Tyr Ser Thr Ala Val Asp Ile
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                                                                     1344
tgg agc ctg ggc tgc atc ttt gct gag atg gtg act cgc cgg gcc ctg
Trp Ser Leu Gly Cys Ile Phe Ala Glu Met Val Thr Arg Arg Ala Leu
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ttc cct gga gat tct gag att gac cag ctc ttc cgg atc ttt cgg act
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Phe Pro Gly Asp Ser Glu Ile Asp Gln Leu Phe Arg Ile Phe Arg Thr
                        455
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ctg ggg acc cca gat gag gtg gtg tgg cca gga gtt act tct atg cct
                                                                     1440
Leu Gly Thr Pro Asp Glu Val Val Trp Pro Gly Val Thr Ser Met Pro
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                                        475
                                                                     1488
gat tac aag cca agt ttc ccc aag tgg gcc cgg caa gat ttt agt aaa
Asp Tyr Lys Pro Ser Phe Pro Lys Trp Ala Arg Gln Asp Phe Ser Lys
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                                    490
gtt gta cct ccc ctg gat gaa gat gga cgg agc ttg tta tcg caa atg
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Val Val Pro Pro Leu Asp Glu Asp Gly Arg Ser Leu Leu Ser Gln Met
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            500
                                                                     1584
ctg cac tac gac cct aac aag cgg att tcg gcc aag gca gcc ctg gct
Leu His Tyr Asp Pro Asn Lys Arg Ile Ser Ala Lys Ala Ala Leu Ala
                           520
                                               525
cac cct ttc ttc cag gat gtg acc aag cca gta ccc cat ctt cga ctc
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Asp Tyr Lys Pro Ser Phe Pro Lys Trp Ala Arg Gln Asp Phe Ser Lys
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Val Val Pro Pro Leu Asp Glu Asp Gly Arg Ser Leu Leu Ser Gln Met
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                                                                       96
gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
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gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc
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Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
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                                                45
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tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
                                                                      240
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
                                        75
                    70
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cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                                    90
                85
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag
                                                                      336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
                                105
            100
                                                                      384
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
                                                 125
        115
                            120
                                                                      432
atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
                        135
                                             140
aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac
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155

Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn

145

| ~~~ | a+a | | at a | 220 | ttc | aan | atc | cac | cac | aac | atc | gag | gac | aac | aαc | 528 |
|------------|------------|------------|-------------------|------------|------------|------------|------------|-------------------|------------|------------|------------|------------|-------------------|------------|------------|------|
| Gly | Ile | Lys | Val | Asn 165 | Phe | Lys | Ile | Arg | His 170 | Asn | Ile | Glu | Asp | Gly 175 | Ser | |
| gtg Val | cag Gln | ctc Leu | gcc Ala 180 | gac Asp | cac His | tac Tyr | cag Gln | cag Gln 185 | aac Asn | acc Thr | ccc Pro | atc Ile | ggc Gly 190 | gac Asp | ggc Gly | 576 |
| ccc | gtg | ctg | cta | ccc | gac | aac | cac | tac | ctg | agc | acc | cag | tcc | gcc | ctg | 624 |
| Pro | Val | Leu 195 | Leu | Pro | Āsp | Asn | His 200 | Tyr | Leu | ser | Thr | 205 | ser | АТА | ьeu | |
| agc | aaa | gac | ccc | aac | gag | aag | cgc | gat | cac | atg | gtc | ctg | ctg | gag | ttc | 672 |
| | 210 | | | | Glu | 215 | | | | | 220 | | | | | 720 |
| gtg | acc | gcc | gcc | ggg | atc Ile | act Thr | Ctc | ggc | Met | gac | gag Glu | Leu | Tvr | Lvs | Ser | 720 |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 | |
| gga | ctc | aga | tct | cga | gag | atg | ctg | tcc | cgt | ggg | tgg | ttt | cac | cga | gac | 768 |
| _ | | | | 245 | Ğlu | | | | 250 | | | | | 255 | | |
| ctc | agt | ggg | ctg | gat | gca | gag | acc | ctg | ctc | aag | ggc | cga | ggt | gtc | cac | 816 |
| | | | 260 | | Āla | | | 265 | | | | | 270 | | | 864 |
| ggt | agc | ttc | ctg | gct | cgg Arg | CCC | agt | cgc | aag | aac | cag Gln | ggt | gac | Phe | Ser | 004 |
| _ | | 275 | | | | | 280 | | | | | 285 | | | | |
| ctc | tcc | gtc | agg | gtg | ggg | gat | cag | gtg | acc | cat | att | cgg | atc | cag | aac | 912 |
| Leu | Ser 290 | Val | Arg | Val | Gly | Asp 295 | Gln | Val | Thr | His | 300 | Arg | ire | GIN | ASII | |
| tca | aaa | gat | ttc | tat | gac | ctg | tat | gga | ggg | gag | aag | ttt | gcg | act | ctg | 960 |
| Ser | Gly | Āsp | Phe | Tyr | Asp | Leu | Tyr | Gly | Gly | Glu | Lys | Phe | Ala | Thr | Leu | |
| 305 | | | | ~~~ | 310 tac | + > 0 | 201 | aaa | cac | 315 | aat | atc | cta | cad | 320 gac | 1008 |
| aca Thr | gag Glu | Leu | Val | Glu | Tyr | Tyr | Thr | Gln | Gln | Gln | Gly | Val | Leu | Gln | Asp | |
| | | | | 325 | | | | | 330 | | | | | 335 | | 1056 |
| cgc | gac | ggc | acc | atc | atc Ile | Cac | ctc | aag Lvs | Tur | ccg Pro | ctg Leu | aac Asn | Cvs | Ser | gat Asp | 1056 |
| | | | 340 | | | | | 345 | | | | | 350 | | | 4404 |
| ccc | act | agt | gag | agg | tgg Trp | tac | cat | ggc | cac | atg | tct | ggc | ggg | cag | gca Ala | 1104 |
| Pro | Thr | 355 | GIU | Arg | Trb | ıyı | 360 | сту | птэ | мес | 261 | 365 | Ory | Q111 | 1114 | |
| gag | acg | ctg | ctg | cag | gcc | aag | ggc | gag | ccc | tgg | acg | ttt | ctt | gtg | cgt | 1152 |
| Glu | Thr 370 | Leu | Leu | Gln | Ála | Lys 375 | Gly | Glu | Pro | Trp | Thr 380 | Phe | ьeu | vaı | Arg | |
| gag | agc | ctc | agc | cag | cct | gga | gac | ttc | gtg | ctt | tct | gtg | ctc | agt | gac | 1200 |
| | Ser | Leu | Ser | Gln | Pro | Gly | Asp | Phe | Val | | Ser | Val | Leu | Ser | Asp 400 | |
| 385 cag | ccc | aaσ | act | aac | 390 cca | aac | tcc | ccq | ctc | 395 agg | gtc | acc | cac | atc | | 1248 |
| Gln | Pro | Lys | Āla | Gly | Pro | бĺу | Ser | Pro | Leu 410 | Arg | Val | Thr | His | Ile 415 | Lys | |
| atic | atα | tac | gag | 405 aat | gga | cqc | tac | aca | | | ggt | ttg | gag | | ttc | 1296 |
| Val | Met | Cys | Glu 420 | Gly | Gly | Arg | Tyr | Thr 425 | Val | Gly | Gly | Leu | Glu 430 | Thr | Phe | |
| gac | agc | ctc | acg | gac | ctg | gta | gag | cat | ttc | aag | aag | acg | ggg | att | gag | 1344 |
| Asp | Ser | Leu 435 | | Asp | Leu | Val | Glu 440 | | Phe | Lys | гÀг | 445 | | iie | Glu | |
| gag | gcc | tca | aac | gcc | ttt | gto | tac | ctg | cgg | cag | ccg | tac | tat | gcc | acg | 1392 |
| | 450 | | | | | 455 | | | | | 460 |) | | | Thr | |
| agg | ata | aat | gcg | gct | gac | att | gag | aac | cga | gtg | ttg | gaa | ctg | aac | aag | 1440 |
| _ | | Asn | Ala | Ala | Asp 470 | | Glu | Asn | Arg | Val 475 | | ı Glu | ьeu | AST | Lys 480 | |
| 465 aao | cad | gao | tcc | gac | gat | aca | gcc | aag | gct | ggc | tto | tgg | gag | gag | ttt | 1488 |
| Lys | Gln | Ğlű | Ser | Glu | 1 Asp | Thr | Ala | Lys | Ala | Gly | Phe | rrp | Glu | ı Glu | Phe | |
| | | | | 485 |) | | | | 490 | J | | | | 495 | , | |

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gag agt ttg cag aag cag gag gtg aag aac ttg cac cag cgt ctg gaa
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Glu Ser Leu Gln Lys Gln Glu Val Lys Asn Leu His Gln Arg Leu Glu
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ggg cag cgg cca gag aac aag ggc aag aac cgc tac aag aac att ctc
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Gly Gln Arg Pro Glu Asn Lys Gly Lys Asn Arg Tyr Lys Asn Ile Leu
                                                 525
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                            520
ccc ttt gac cac agc cga gtg atc ctg cag gga cgg gac agt aac atc
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Pro Phe Asp His Ser Arg Val Ile Leu Gln Gly Arg Asp Ser Asn Ile
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ccc ggg tcc gac tac atc aat gcc aac tac atc aag aac cag ctg cta
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Pro Gly Ser Asp Tyr Ile Asn Ala Asn Tyr Ile Lys Asn Gln Leu Leu
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ggc cct gat gag aac gct aag acc tac atc gcc agc cag ggc tgt ctg
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Gly Pro Asp Glu Asn Ala Lys Thr Tyr Ile Ala Ser Gln Gly Cys Leu
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                                                         575
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Glu Ala Thr Val Asn Asp Phe Trp Gln Met Ala Trp Gln Glu Asn Ser
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cgt gtc atc gtc atg acc acc cga gag gtg gag aaa ggc cgg aac aaa
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Arg Val Ile Val Met Thr Thr Arg Glu Val Glu Lys Gly Arg Asn Lys
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                                                                     1872
tgc gtc cca tac tgg ccc gag gtg ggc atg cag cgt gct tat ggg ccc
Cys Val Pro Tyr Trp Pro Glu Val Gly Met Gln Arg Ala Tyr Gly Pro
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tac tct gtg acc aac tgc ggg gag cat gac aca acc gaa tac aaa ctc
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Tyr Ser Val Thr Asn Cys Gly Glu His Asp Thr Thr Glu Tyr Lys Leu
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cgt acc tta cag gtc tcc ccg ctg gac aat gga gac ctg att cgg gag
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Arg Thr Leu Gln Val Ser Pro Leu Asp Asn Gly Asp Leu Ile Arg Glu
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Ile Trp His Tyr Gln Tyr Leu Ser Trp Pro Asp His Gly Val Pro Ser
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            660
gag cct ggg ggt gtc ctc agc ttc ctg gac cag atc aac cag cgg cag
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Glu Pro Gly Gly Val Leu Ser Phe Leu Asp Gln Ile Asn Gln Arg Gln
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gaa agt ctg cct cac gca ggg ccc atc atc gtg cac tgc agc gcc ggc
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Glu Ser Leu Pro His Ala Gly Pro Ile Ile Val His Cys Ser Ala Gly
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                        695
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Ile Gly Arg Thr Gly Thr Ile Ile Val Ile Asp Met Leu Met Glu Asn
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                    710
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Ile Ser Thr Lys Gly Leu Asp Cys Asp Ile Asp Ile Gln Lys Thr Ile
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cag atg gtg cgg gcg cag cgc tcg ggc atg gtg cag acg gag gcg cag
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Gln Met Val Arg Ala Gln Arg Ser Gly Met Val Gln Thr Glu Ala Gln
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                                 745
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Tyr Lys Phe Ile Tyr Val Ala Ile Ala Gln Phe Ile Glu Thr Thr Lys
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                             760
aag aag ctg gag gtc ctg cag tcg cag aag ggc cag gag tcg gag tac
                                                                      2352
Lys Lys Leu Glu Val Leu Gln Ser Gln Lys Gly Gln Glu Ser Glu Tyr
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                         775
ggg aac atc acc tat ccc cca gcc atg aag aat gcc cat gcc aag gcc
                                                                      2400
Gly Asn Ile Thr Tyr Pro Pro Ala Met Lys Asn Ala His Ala Lys Ala
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                    790
                                                                      2448
tcc cgc acc tcg tcc aaa cac aag gag gat gtg tat gag aac ctg cac
 Ser Arg Thr Ser Ser Lys His Lys Glu Asp Val Tyr Glu Asn Leu His
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act aag aac aag agg gag gag aaa gtg aag aag cag cgg tca gca gac
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 Thr Lys Asn Lys Arg Glu Glu Lys Val Lys Lys Gln Arg Ser Ala Asp
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Pro Thr Ser Glu Arg Trp Tyr His Gly His Met Ser Gly Gly Gln Ala
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                                              365
Glu Thr Leu Leu Gln Ala Lys Gly Glu Pro Trp Thr Phe Leu Val Arg
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                                         380
Glu Ser Leu Ser Gln Pro Gly Asp Phe Val Leu Ser Val Leu Ser Asp
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                                      395
Gln Pro Lys Ala Gly Pro Gly Ser Pro Leu Arg Val Thr His Ile Lys
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                                  410
Val Met Cys Glu Gly Gly Arg Tyr Thr Val Gly Gly Leu Glu Thr Phe
                              425
          420
Asp Ser Leu Thr Asp Leu Val Glu His Phe Lys Lys Thr Gly Ile Glu
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                                              445
Glu Ala Ser Gly Ala Phe Val Tyr Leu Arg Gln Pro Tyr Tyr Ala Thr
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Arg Val Asn Ala Ala Asp Ile Glu Asn Arg Val Leu Glu Leu Asn Lys
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Lys Gln Glu Ser Glu Asp Thr Ala Lys Ala Gly Phe Trp Glu Glu Phe
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Glu Ser Leu Gln Lys Gln Glu Val Lys Asn Leu His Gln Arg Leu Glu
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Gly Gln Arg Pro Glu Asn Lys Gly Lys Asn Arg Tyr Lys Asn Ile Leu
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Pro Phe Asp His Ser Arg Val Ile Leu Gln Gly Arg Asp Ser Asn Ile
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Pro Gly Ser Asp Tyr Ile Asn Ala Asn Tyr Ile Lys Asn Gln Leu Leu
                  550
                                    555
Gly Pro Asp Glu Asn Ala Lys Thr Tyr Ile Ala Ser Gln Gly Cys Leu
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              565
Glu Ala Thr Val Asn Asp Phe Trp Gln Met Ala Trp Gln Glu Asn Ser
                              585
Arg Val Ile Val Met Thr Thr Arg Glu Val Glu Lys Gly Arg Asn Lys
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                          600
                                             605
Cys Val Pro Tyr Trp Pro Glu Val Gly Met Gln Arg Ala Tyr Gly Pro
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Tyr Ser Val Thr Asn Cys Gly Glu His Asp Thr Thr Glu Tyr Lys Leu
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                         635
Arg Thr Leu Gln Val Ser Pro Leu Asp Asn Gly Asp Leu Ile Arg Glu
              645
                                  650
Ile Trp His Tyr Gln Tyr Leu Ser Trp Pro Asp His Gly Val Pro Ser
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Glu Pro Gly Gly Val Leu Ser Phe Leu Asp Gln Ile Asn Gln Arg Gln
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Glu Ser Leu Pro His Ala Gly Pro Ile Ile Val His Cys Ser Ala Gly
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                                        700
Ile Gly Arg Thr Gly Thr Ile Ile Val Ile Asp Met Leu Met Glu Asn
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Ile Ser Thr Lys Gly Leu Asp Cys Asp Ile Asp Ile Gln Lys Thr Ile
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Gln Met Val Arg Ala Gln Arg Ser Gly Met Val Gln Thr Glu Ala Gln
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Tyr Lys Phe Ile Tyr Val Ala Ile Ala Gln Phe Ile Glu Thr Thr Lys
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Lys Lys Leu Glu Val Leu Gln Ser Gln Lys Gly Gln Glu Ser Glu Tyr
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                                          780
Gly Asn Ile Thr Tyr Pro Pro Ala Met Lys Asn Ala His Ala Lys Ala
                  790
                                      795
Ser Arg Thr Ser Ser Lys His Lys Glu Asp Val Tyr Glu Asn Leu His
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Lys Glu Lys Ser Lys Gly Ser Leu Lys Arg Lys
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gag acc ctg ctc aag ggc cga ggt gtc cac ggt agc ttc ctg gct cgg
                                                                       96
Glu Thr Leu Leu Lys Gly Arg Gly Val His Gly Ser Phe Leu Ala Arg
                                25
            20
ccc agt cgc aag aac cag ggt gac ttc tcg ctc tcc gtc agg gtg ggg
                                                                      144
Pro Ser Arg Lys Asn Gln Gly Asp Phe Ser Leu Ser Val Arg Val Gly
                            40
                                                 45
gat cag gtg acc cat att cgg atc cag aac tca ggg gat ttc tat gac
                                                                      192
Asp Gln Val Thr His Ile Arg Ile Gln Asn Ser Gly Asp Phe Tyr Asp
                        55
ctg tat gga ggg gag aag ttt gcg act ctg aca gag ctg gtg gag tac
                                                                      240
Leu Tyr Gly Gly Glu Lys Phe Ala Thr Leu Thr Glu Leu Val Glu Tyr
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tac act cag cag cag ggt gtc ctg cag gac cgc gac ggc acc atc atc
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Tyr Thr Gln Gln Gly Val Leu Gln Asp Arg Asp Gly Thr Ile Ile
                                    90
                                                                      336
cac etc aag tac ecg etg aac tge tee gat eec act agt gag agg tgg
His Leu Lys Tyr Pro Leu Asn Cys Ser Asp Pro Thr Ser Glu Arg Trp
                                                                      384
tac cat qqc cac atg tct qqc qqq cag gca gag acg ctg ctg cag gcc
Tyr His Gly His Met Ser Gly Gly Gln Ala Glu Thr Leu Leu Gln Ala
                            120
                                                125
                                                                      432
aag ggc gag ccc tgg acg ttt ctt gtg cgt gag agc ctc agc cag cct
Lys Gly Glu Pro Trp Thr Phe Leu Val Arg Glu Ser Leu Ser Gln Pro
                        135
                                             140
                                                                      480
gga gac ttc gtg ctt tct gtg ctc agt gac cag ccc aag gct ggc cca
Gly Asp Phe Val Leu Ser Val Leu Ser Asp Gln Pro Lys Ala Gly Pro
                                        155
                    150
                                                                      528
ggc tcc ccg ctc agg gtc acc cac atc aag gtc atg tgc gag ggt gga
Gly Ser Pro Leu Arg Val Thr His Ile Lys Val Met Cys Glu Gly Gly
                                    170
                165
cgc tac aca gtg ggt ggt ttg gag acc ttc gac agc ctc acg gac ctg
                                                                      576
Arg Tyr Thr Val Gly Gly Leu Glu Thr Phe Asp Ser Leu Thr Asp Leu
                                 185
                                                     190
                                                                      624
gta gag cat ttc aag aag acg ggg att gag gag gcc tca ggc gcc ttt
```

Val Glu His Phe Lys Lys Thr Gly Ile Glu Glu Ala Ser Gly Ala Phe

| | | 195 | | | | | 200 | | | | | 205 | | | | |
|------------|------------|-------|------------|-------|------------|------------|-----|-------|-------|------------|------------|-------------|------------|------------|------------|-------|
| gtc | tac | cta | cgg | cag | ccg | tac | tat | gcc | acg | agg | gtg | aat | gcg | gct | gac | 672 |
| Val | Tyr 210 | Leu | Arg | Gln | Pro | Tyr 215 | Tyr | Ala | Thr | Arg | Val 220 | Asn | Ala | Ala | Asp | |
| att | σασ | aac | cga | gtg | ttg | gaa | ctg | aac | aag | aag | cag | gag | tcc | gag | gat | 720 |
| Ile 225 | Glu | Asn | Arg | Val | Leu 230 | Glu | Leu | Asn | Lys | Lys 235 | Gln | Glu | Ser | Glu | Asp 240 | |
| aca | gcc | aag | gct | ggc | ttc | tgg | gag | gag | ttt | gag | agt | ttg | cag | aag | cag | 768 |
| | | | Ala | 245 | | | | | 250 | | | | | 255 | | 0.1.5 |
| gag | gtg | aag | aac | ttg | cac | cag | cgt | ctg | gaa | ggg | cag | cgg | cca | gag | aac | 816 |
| | | | Asn 260 | | | | | 265 | | | | | 270 | | | 0.64 |
| aag | ggc | aag | aac | cgc | tac | aag | aac | att | ctc | ccc | ttt | gac | cac | agc | cga | 864 |
| _ | | 275 | Asn | | | | 280 | | | | | 285 | | | | 912 |
| gtg | atc | ctg | cag | gga | cgg | gac | agt | aac | atc | CCC | ggg | COT | gac | Tur | Tle | 912 |
| | 290 | | Gln | | | 295 | | | | | 300 | | | | | 960 |
| aat | gcc | aac | tac | atc | aag | aac | cag | ctg | cta | ggc | Dro | yaı Aen | Glu | Agn | Δla | 900 |
| | Ala | Asn | Tyr | He | Lys 310 | Asn | GIN | Leu | ьец | 315 | PIO | ASP | GIU | ASII | 320 | |
| 305 | 200 | + 20 | atc | acc | | cad | aac | tat | cta | | acc | acq | atc | aat | | 1008 |
| T.vs | Thr | Tyr | Ile | Ala | Ser | Gln | Glv | Cvs | Leu | Glu | Ala | Thr | Val | Asn | Āsp | |
| _ | | | | 325 | | | | | 330 | | | | | 335 | | |
| ttc | tgg | cag | atg | gcg | tgg | cag | gag | aac | agc | cgt | gtc | atc | gtc | atg | acc | 1056 |
| Phe | Trp | Gln | Met | Ala | Trp | Gln | Glu | Asn | Ser | Arg | Val | Ile | Val | Met | Thr | |
| | | | 340 | | | | | 345 | | | | | 350 | | | 1104 |
| acc | cga | gag | gtg | gag | aaa | ggc | cgg | aac | aaa | tgc | gtc | CCa | Tur | Trn | Pro | 1104 |
| | | 355 | Val | | | | 360 | | | | | 365 | | | | 1152 |
| gag | gtg | ggc | atg Met | cag | cgt | gct | tat | ggg | CCC | Tur | Sor | g Lg Val | Thr | Agn | Cvs | 1132 |
| GIu | 370 | GIY | мет | GIII | AIG | 375 | ıyı | GIY | FLO | 1 7 1 | 380 | Val | 1111 | 11011 | 0,10 | |
| aaa | gag | cat | gac | aca | acc | gaa | tac | aaa | ctc | cgt | acc | tta | cag | gtc | tcc | 1200 |
| Gly | Ğlu | His | Āsp | Thr | Thr | Glu | Tyr | Lys | Leu | Arg | Thr | Leu | Gln | Val | Ser | |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 | 1040 |
| ccg | ctg | gac | aat | gga | gac | ctg | att | cgg | gag | atc | tgg | cat | Tur | Gln | Tur | 1248 |
| Pro | Leu | Asp | Asn | 405 | Asp | Leu | тте | Arg | 410 | 116 | тгр | птэ | тут | 415 | ıyı | |
| cta | agc | taa | ccc | | cat | aaa | atc | ccc | | gag | cct | ggg | ggt | | ctc | 1296 |
| Leu | Ser | Trp | Pro | Asp | His | Gly | Val | Pro | Ser | Glu | Pro | Gly | Gly 430 | Val | Leu | |
| 200 | ++0 | ata | 420 gac | cad | atc | aac | cad | | cad | gaa | agt | cta | | cac | qca | 1344 |
| Ser | Phe | Leu | Asp | Gln | Ile | Asn | Gln | Arq | Gln | Glu | Ser | Leu | Pro | His | Åla | |
| | | 435 | | | | | 440 | | | | | 445 | | | | |
| ggg | ccc | ato | atc | gtg | cac | tgc | agc | gcc | ggc | atc | ggc | cgc | aca | ggc | acc | 1392 |
| Gly | Pro 450 | Ile | lle | Val | His | Cys 455 | Ser | Ala | Gly | Ile | Gly 460 | Arg | Thr | Gly | Thr | |
| ato | att | gto | atc | gac | atg | ctc | atg | gag | aac | ato | tcc | acc | aag | ggc | ctg | 1440 |
| | | Val | . Ile | Asp | | Leu | Met | Glu | Asr | Ile | Ser | Thr | Lys | GIY | Leu | |
| 465 | , | | | | 470 | | | | + - | 475 | | , ata | caa | 000 | 480 | 1488 |
| gac | tgt: | . gad | att | . gac | atc | Cln | aag | Thr | : all | Glo | Met | Val | Ara | gcg Ala | cag Gln | 1100 |
| | | | | 485 | | | | | 490 |) | | | | 495 | 1 | 1536 |
| cgc | : tag | l ggd | atg | gtg | cag | acg | gag | geg | Cay | Tur | · T.ve | Phe | . alc | Tyr | gtg Val | 1330 |
| | | | 500 |) | | | | 505 | 5 | | | | 510 |) | | 1504 |
| gco | ato | gc | cag | ttc | att | gaa | acc | act | aaq | j aag | aaq | j cto | gag | gto | ctg | 1584 |
| | | 51 | 5 | | | | 520 |) | | | | 525 | 5 | | . Leu | |
| cad | g tco | т са | r aac | ggc | cag | gag | to | gag | g tao | ggg | g aad | ato | acc | : tat | ccc | 1632 |
| Gli | n Sei | Gl: | n Lys | s Gly | Gln | Glu | Ser | : Glu | ту: | c Gly | / Ası | ı Ile | e Thr | туз | Pro | |

| | 530 | | | | | 535 | | | | | 540 | | | | | |
|------------|-------|------------|--------------|--------------|---------------|------------|-------------|-------------|------------|------------|-------------|--------------|------------|--------------|----------------|-------|
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| | Ala | Met | Lys | Asn | Ala 550 | His | Ala | Lys . | Ата | 555 | AIG | IIII | ser | 361 | 560 | |
| 545 cac | aag | gag | gat | gtg | tat | gag | aac | ctg | cac | act | aag | aac | aag | agg | gag | 1728 |
| His | Lys | Glu | Asp | Val 565 | Tyr | Glu | Asn | Leu | His 570 | Thr | Lys | Asn | гàг | 575 | GIU | 1776 |
| gag | aaa | gtg | aag | aag | cag | cgg | tca | gca | gac | aag | gag | aag | agc Ser | aag | ggt Glv | 1776 |
| | | | 580 | | Gln | | | 585 | | | | | 590 | | | |
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| | | 595 | | | Arg | | 600 | | | | | 605 | | | | 1072 |
| gat | cca | ccg | gtc | gcc | acc | atg | gtg | agc | aag | ggc | gag | gag | Ctg | Phe | Thr | 1872 |
| - | 610 | | | | Thr | 615 | | - | | | 620 | | | | | |
| ggg | ata | gtg | ccc | atc | ctg | gtc | gag | ctg | gac | ggc | gac | gta | aac | ggc | cac | 1920 |
| Gly | Val | Val | Pro | Ile | Leu 630 | Val | Glu | Leu | Asp | Gly 635 | Asp | Val | Asn | GTA | н1S 640 | |
| 625 | ttc | agc | atā | tcc | aac | gag | ggc | gag | ggc | gat | gcc | acc | tac | ggc | aag | 1968 |
| Lys | Phe | Ser | Val | Ser 645 | Gly | Ğlū | ĞÎy | Glu | Gly 650 | Asp | Ala | Thr | Tyr | Gly 655 | Lys | |
| ctg | acc | ctg | aag | ttc | atc | tgc | acc | acc | ggc | aag | ctg | ccc | gtg | ccc | tgg | 2016 |
| Leu | Thr | Leu | Lys 660 | Phe | Ile | Cys | Thr | Thr 665 | Gly | Lys | Leu | Pro | 670 | Pro | Trp | 0054 |
| ccc | acc | ctc | gtg | acc | acc | ctg | acc | tac | ggc | gtg | cag | tgc | ttc | agc | cgc Ara | 2064 |
| Pro | Thr | Leu 675 | | Thr | Thr | Leu | 680 | TYL | Сту | vaı | GIII | 685 | 1110 | 501 | **** 9 | |
| tac | ccc | gac | cac | atg | aag | cag | cac | gac | ttc | ttc | aag | tcc | gcc | atg | CCC | 2112 |
| Tyr | Pro | Asp | His | Met | Lys | Gln 695 | His | Asp | Phe | Phe | Lys 700 | Ser | Ala | мет | Pro | 21.60 |
| gaa | ggc | tac | gto | cag | gag | cgc | acc | atc | ttc | ttc | aag | gac | gac | ggc | aac | 2160 |
| Glu 705 | | Tyr | Val | Gln | 1 GLu 710 | | Tnr | тте | Pne | 715 | цуз | изр | АЗР | GLY | 720 | |
| t a C | - 220 | acc | cgc | gcc | : gag | ata | aag | ttc | gag | ggc | gac | acc | ctg | gtg | aac | 2208 |
| Туг | Lys | Thr | Arg | Ala 725 | ı Glu | Val | Lys | Phe | Glu 730 | GTY | Asp | Thr | Leu | 735 | ASII | |
| cgc | ato | gag | cto | aac | a a a c | atc | gac | ttc | aag | gag | gac | ggc | aac | ato | ctg | 2256 |
| Arg | , Ile | Glu | Let | ı Lys | s Gly | Ile | Asp | Phe 745 | Lуs | Glu | Asp | GIY | 750 | тте | Leu | |
| aac | r cac | : aac | 740 r cto | 1 (1a) | ı tac | aac | tac | aac | ago | cac | aac | gtc | tat | ato | atg | 2304 |
| Gly | His | Lys | Lei | í Ğli | ı Tyr | Asn | Tyr | Asn | Ser | His | Asn | val | туг | : Ile | Met | |
| | | 755 | 5 | | * 220 | | 760 ato | aan 'aan | ato | r aac | : ttc | 765 aaq | | cq | cac | 2352 |
| Ala | a Asp | Ly | s Gli | ı Lys | s Asr | ı Gly | , Ile | Lys | Val | Asr | Phe 780 | ь гаг | Ile | e Ar | g His | |
| 22 | 77(|) r da/ | r dad | ~ aa | c ago | 775 ato | rcac | cto | : qc | gad | | | caç | g ca | g aac | 2400 |
| Ası | n Ile | Gl | ı Ası | o G1 | y Sei | val | Glr | Leu | ιĀlā | a Asp | HIS | s Tyr | Gli | ı Glı | I ASII | |
| 7.8 | 5 | | | | 790 |) | | | | 79: |) | | | | 800 | 2448 |
| ace | c cco | c at | c gg | c ga v As | c ggo n Gl | o cco | ya] | l Lei | ı Lei | u Pro | o Asp |) Asr | h His | з Ту | c ctg r Leu | |
| | | | | 80 | 5 | | | | 810 | U | | | | 9 T | 5 | 2406 |
| ag | c ac | c ca | g tc | c gc | c ct | g age | c aaa | a gad | CC | c aad | c gad | g aaq | g cgo | c ga n As | t cac | 2496 |
| | | | 82 | 0 | | | | 825 | 5 | | | | 83 | U | p His | |
| at | g gt | c ct | σ ct | a aa | g tt | c gt | gac | c gc | gc | c gg | g at | c act | t ct | c gg | c atg | 2544 |
| Me | t Va | l Le | u Le | u Gl | u Ph | e Va | 1 Th: 84 | r Ala | a Al | a GI | А ТТ | e Th: 84: | г те | u Gl | y Met | |
| αa | сαа | 83 g ct | | c aa | g ta | a | 04 | - | | | | J 4. | | | | 2562 |
| | p Gl | u Le | | | | | | | | | | | | | | |
| | 85 | 0 | | | | | | | | | | | | | | |

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<220>

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Gly Glu His Asp Thr Thr Glu Tyr Lys Leu Arg Thr Leu Gln Val Ser
                                  395
                390
Pro Leu Asp Asn Gly Asp Leu Ile Arg Glu Ile Trp His Tyr Gln Tyr
                               410
             405
Leu Ser Trp Pro Asp His Gly Val Pro Ser Glu Pro Gly Gly Val Leu
                                          430
                 425
         420
Ser Phe Leu Asp Gln Ile Asn Gln Arg Gln Glu Ser Leu Pro His Ala
                               445
             440
Gly Pro Ile Ile Val His Cys Ser Ala Gly Ile Gly Arg Thr Gly Thr
  450 455 460
Ile Ile Val Ile Asp Met Leu Met Glu Asn Ile Ser Thr Lys Gly Leu
        470
                                  475
Asp Cys Asp Ile Asp Ile Gln Lys Thr Ile Gln Met Val Arg Ala Gln
                              490
          485
Arg Ser Gly Met Val Gln Thr Glu Ala Gln Tyr Lys Phe Ile Tyr Val
                                          510
                  505
Ala Ile Ala Gln Phe Ile Glu Thr Thr Lys Lys Lys Leu Glu Val Leu
                                  525
                        520
Gln Ser Gln Lys Gly Gln Glu Ser Glu Tyr Gly Asn Ile Thr Tyr Pro
                                     540
                    535
Pro Ala Met Lys Asn Ala His Ala Lys Ala Ser Arg Thr Ser Ser Lys
                                  555
                 550
His Lys Glu Asp Val Tyr Glu Asn Leu His Thr Lys Asn Lys Arg Glu
             565
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Glu Lys Val Lys Lys Gln Arg Ser Ala Asp Lys Glu Lys Ser Lys Gly
                  585
Ser Leu Lys Arg Lys Arg Ile Leu Gln Ser Thr Val Pro Arg Ala Arg
                               605
              600
       595
Asp Pro Pro Val Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe Thr
  610 615
 Gly Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly His
                                  635
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 Lys Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys
                               650
                                                655
           645
 Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp
                                           670
                            665
           660
 Pro Thr Leu Val Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg
                                          685
                         680
       675
 Tyr Pro Asp His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro
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                    695
 Glu Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn
                          715
         710
 Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn
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               725
 Arg Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu
           740 745
 Gly His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met
                                          765
             760
 Ala Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His
           775
                                    780
 Asn Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn
                                   795
                  790
 Thr Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu
                                810
               805
 Ser Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His
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  Asp Glu Leu Tyr Lys
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Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
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gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc
                                                                       96
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
                                 25
             20
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc
                                                                      144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
                             40
 tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc
                                                                      192
 Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
                         55
 ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag
                                                                       240
 Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
                                         75
                                                                       288
 cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag
 Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                                     90
                 85
 cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag
                                                                       336
 Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
                                                     110
                                 105
             100
 gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc
                                                                       384
 Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
                             120
 atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac
                                                                       432
 Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
                         135
                                              140
 aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac
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 Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
                                          155
                      150
  ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc
                                                                       528
 Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
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  gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc
                                                                        576
  Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
                                  185
  ccc gtg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg
                                                                        624
  Pro Val Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
                                                   205
                             200
          195
  agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc
                                                                        672
```

| | | | | | | | _ | _ | *** | <u>+</u> | 17.3 | т, | O11 1 | | Glu | Ρŀ | ne | |
|------|-------|------------|-------|-----------|----------------|-------|------------|-----------|----------|--------------|-------|----------|-----------|----------|--------------|--------------|------|------|
| | 210 | | | | | 215 | | Asp | | | 220 | , | | | | | | 720 |
| ata | acc | acc | acc | aaa | atc | act | ctc | ggc | atg | gac | gag | C | tg : | tac | aag | τ. | cc | 720 |
| Val | Thr | Ala | Ala | Ğĺv | Ile | Thr | Leu | ĞÎy | Met | Asp | Glu | ı L | eu ' | Гуr | Lys | | - | |
| 225 | | | | | 230 | | | | | 235 | | | | | | ~ | 40 | |
| | c+c | ana | tct | cga | act | caa | act | tcg | aat | tcg | acc | a | tg · | gag | cgg | C | cc | 768 |
| gga | Tou | aya Ara | Sor | Ara | Δla | Gln | Ala | Ser | Asn | Ser | Thr | . M | et | Glu | Arg | P: | ro | |
| СТА | Leu | Arg | Ser | 245 | | 02 | | | 250 | | | | | | 255 | | | |
| | | | | 245 | ~~~ | ~~~ | aac | ggg | | taa | gag | ı a | ta | caa | gag | C | gg | 816 |
| ccg | ggg | ctg | cgg | ccg | ggc | gcg | ggc | 999 | Dro | Trn | Gli | ı M | et | Ara | Ğlu | Α | ra | |
| Pro | Gly | Leu | | | GTĀ | Ата | GLY | Gly | FIO | ırp | 010 | | | 270 | | | _ | |
| | | | 260 | | | | | 265 | 4 - 4 | | + | | | _ | caa | | aa | 864 |
| ctg | ggc | acc | ggc | ggc | ttc | ggg | aac | gtc | tgt | cly | m | - C | ay 115 | uic | 720 | | 311 | |
| Leu | Gly | Thr | Gly | Gly | Phe | Gly | Asn | vaı | Cys | ьeu | тул | LG | т11 | птэ | Arg | , 0 | 14 | |
| | | 275 | | | | | 280 | | | | | 2 | .00 | | | | | 912 |
| ctt | gat | ctc | aaa | ata | gca | att | aag | tct | tgt | cgc | cta | a g | gag | cta - | agu | , а. . т | .CC | 712 |
| Leu | Ásp | Leu | Lys | : Ile | Ala | Ile | Lys | Ser | Cys | Arg | те | u G | ilu | Leu | Ser | · T | nr | |
| | 200 | | | | | 295 | | | | | 201 | U | | | | | | 0.00 |
| 222 | | aga | αaa | cas | t qq | tgo | cat | gaa | atc | cag | at | t a | atg | aag | aag | Ţt | tg | 960 |
| Tue | Aen | Arc | Gli | Arc | Tro | Cvs | His | Glu | Ile | Gln | Ile | e M | 1et | Lys | Lys | 3 L | .eu | |
| 205 | | | | | 310 |) | | | | 212 | , | | | | | _ | | |
| | a a + | ~~ | 1 | · att | - ata | aac | r acc | tgt: | gat | gtt | . cc | t g | gaa | gaa | ttg | g a | at | 1008 |
| aac | Cat | 71. | , aai | . y.c. | . 900 I Wal | T.175 | : Ala | Cys | Ásp | ۷al | Pr | 0 | Glu | Glu | Let | ı P | Asn | |
| ASII | нтѕ | ATC | i noi | 325 | | | | 1 | 330 | | | | | | 335 | 5 | | |
| | 4.4. | | | - 021 | - ata | t cct | ctt | cta | αca | ato | g qa | a t | tac | tgt | tct | t g | gga | 1056 |
| att | ttg | - all | . Ca | - ya | o Val | Dro | Lei | ı Leu | Ala | Met | Ğl | u I | Гуr | Cys | Se | r (| Sly | |
| тте | ьес | TT | | | y va. | | , 100 | 345 | | | | | _ | 350 | | | | |
| | | _4_ | 34 | | ~ at/ | · ct | - 220 | aaa | cca | gaa | a aa | t t | tat | tgt | gga | a o | ctt | 1104 |
| gga | gat | | og. | a aa | g CC | , | ı Aer | Lys | Pro | Gli | ı As | n (| Cvs | Cys | Gl | y 1 | Leu | |
| GLy | Asp | | | Э гА | з те | т пе | 360 | יעבי ר | , | | | | 365 | • | | | | |
| | | 35 |) | | - at: | + + ~ | + ++: | a cta | a a a t | · gat | t at | .a (| aaa | tct | qq | ga | att | 1152 |
| aaa | gaa | a ag | c ca | y at | a CC | . 60 | r T 🗅 1 | ı Lev | ı Sei | · Ası | n Il | е (| Ğĺv | Ser | Gl | y : | Ile | |
| Lys | | | r GI | и тт | е те | 27 | г пе, | и псс | | , | 38 | 30 | - 4 | | | _ | | |
| | 370 |) | | | _ | 37 | 5 - 5+: | + a+a | Cat | - ca | | | cta | aaa | cc | t (| qaa | 1200 |
| cga | a tai | : tt | g ca | t ga | a aa | c aa | a at | t ata | L Udi | . Ar | α Δo | en i | Len | Lvs | Pr | 0 1 | Ğlu | |
| Arg | у Ту: | r Le | u Hi | s Gl | u As | и га | S II | e Ile | S UT: | 39 | y As | P. | псч | | | - | 400 | |
| 385 | 5 | | | | 39 | 0 | _ | | | | | | cat | 222 | at | | | 1248 |
| aad | ata | a gt | t ct | t ca | g ga | t gt | t gg | t gga | a aaq | ا مد - ۲۱ | a at | -a | uie | T.375 | T1 | ۵ | Tle | |
| Ası | ıll | e Va | l Le | | | p Va | T GT | y Ğĺ | у гу: | Z TT | e 11 | LE | 1113 | шус | 41 | 5 | | |
| | | | | 40 | 5 | | | | 41 | | | ~+ | ata | tat | | | tct | 1296 |
| gat | t ct | g gg | a ta | t go | c aa | a ga | t gt | t ga | t ca | a 99 | a ay | yı. | Tou | Cure | ጥ ከ | r | Ser | |
| Asj | р Le | u Gl | у Ту | r Al | .а Lу | s As | p Va | 1 As | p GI: | u Gr | у 5 | ST | пеп | 430 | , 11. } | - | 001 | |
| | | | 4.2 | · ^ | | | | 42 | ರ | | | | | 300 | , | | | 1344 |
| tt | t gt | g gg | a ac | a ct | g ca | g ta | t ct | g gc | c cc | a ga | g Ci | | Dho | Gli | , αυ 1 Δο | en. | Lvs | |
| Ph: | e Va | 1 G1 | y Th | ır L∈ | eu Gl | n Ty | r Le | u Al | a Pr | 0 61 | u L | eu | 445 | GIC | | ,,, | 2,0 | |
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| CC | t ta | c ac | a go | cc ac | ct gt | t ga | ıt ta | t tg | g ag | C LL | L G | 99 | The | Mot | - 17: | 31 | Phe | |
| Pr | о Ту | r Th | ır A. | La Th | nr Va | il As | P Τλ | r Tr | p se | r Pi | ie G | ту 60 | 1111 | . He | . • • | | 11.0 | |
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| ga | a tg | t at | ct go | ct go | ga ta | at ag | ad co | t tt | ד די | g ca | 16 6 | at in | TO | , C1 | n Di | ro | Phe | |
| Gl | u Cy | s I | Le A | La G | Ly Ty | r A | rg Pi | o Ph | е ге | u n | 12 11 | 15 | ьес | ı Gı. | | LO | 480 | |
| 46 | 5 | | | | 4 | 70 | | | | | 75 | ~~ | +~+ | - at | s + | ++ | | 1488 |
| ac | c to | g c | at g | ag a | ag at | t a | ag aa | ag aa | ig ga | ול כנ | ca a | ay | Con | . a. | a D | ha | Δla | |
| Th | r Tr | тр Н | is G | lu L | ys I | le L | ys Ly | ys L | S AS | sp F. | ro L | ıys | СУ | 2 11 | · - | 95 | nia | |
| | | | | 1 | 05 | | | | 4 : | , , | | | | | - | - | | 1536 |
| to | it ga | aa g | ag a | tg t | ca g | ga g | aa gʻ | tt co | gg t | t a | gt a | igc | ca | | a C | ~~ | Cln | 1000 |
| Cy | rs G. | Lu G | lu M | et S | er G | ly G | lu V | aı Aı | rg Pi | ne S | er S | er | Hl | 5 10 | - | LO | Gili | |
| | | | | ΛΛ | | | | - 51 | כנ | | | | | J - | • | | | 1584 |
| cc | ca aa | at a | gc c | tt t | gt a | gt t | ta a | ta gi | ta ga | aa c | CC a | atg | ga | a aa | C L | gg | CLA | 1304 |
| Pı | co A | sn S | er L | eu C | ys S | er L | eu I | le Va | al G | Lu P | ro N | 1et | . 61 | u no | 11 T | rЪ | ьeu | |
| | | 5 | 15 | | | | 5 | 20 | | | | | 32 | J | | | | 1632 |
| C | ag t | tg a | tg t | tg a | at t | gg g | ac c | ct c | ag c | ag a | ga q | gga | gg | a cc | ic g | L L - 1 | gac | 1032 |
| G. | ln L | eu M | et I | eu A | sn T | rp A | sp P | ro G | ln G | ın A | rg c | этА | GI | у гі | . U V | αı | Asp | |
| | | 2 () | | | | - 5 | 35 | | | | | J40 | , | | | | | 1680 |
| C. | tt a | ct t | tg a | ag c | ag c | ca a | ga t | gt t | tt g | ta t | ta | atg | g ga | i Ca | ıc a | ııi | ttg | 1000 |
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|-----------|----------------|--------------|--------------|--------------|-------------|------------|-------------|-------------|------------|--------------|--------------|--------------|----------|-------|--------------|----------|------|-----------------------|--------|
| Leu | Thr | Leu | Lys | Gln | Pro 550 | Arg | Cys | s Ph | ıe V | al. | ьеи 555 | ме | et £ | Asp | пто | тт. | | 560 | |
| 545 | tta | aag | ata | gta | cac | atc | cta | a aa | at a | ita | act | tc | t (| gca | aag | at | a a | att | 1728 |
| Asn | Leu | Lys | Ile | Val | His | IIe | Lei | 1 AS | sn M | 1et 570 | 1111 | 36 | -1 1 | ni a | БуС | 57 | 5 | | |
| tct | ttt | ctq | tta | cca | cct | gat | gaa | aaq | gt o | ctt | cat | to | a | cta | cag | tc | t | cgt | 1776 |
| Ser | Phe | Leu | Leu | Pro | Pro | Asp | GII | 1 Se 58 | er 1 85 | _eu | птэ | 50 | SL . | Бец | 590 | - | | 5 | 1024 |
| att | gag | cgt | gaa | act | gga | ata | aa | t a | ct q | ggt | tct | ca | aa | gaa | Ctt | CT | ו ס. | tca Ser | 1824 |
| Ile | Glu | Arg | Glu | Thr | Gly | Ile | 60 | n 111 0 | nr (| этХ | ser | Gı | L11 ' | 605 | пси | | | | 1872 |
| gag | aca | gga | att | tct | ctg | gat | CC | t co | gg a | aaa | cca | . gc | CC la | tct | Gln | Cv | rs ' | gıı Val | 1072 |
| | 610 | | Ile | | | 675 |) | | | | | 02 | 20 | | | | | | 1920 |
| cta | gat | gga | gtt | aga | ggc | : tgt | ga: | t a | gc i | tat | atg | gt | tt ~l | tat | ttg | D) | :t | gat Asn | 1920 |
| 625 | | | Val | | 630 |) | | | | | 033 |) | | | | | | 0 2 0 | 1050 |
| | agt | aaa | act | gta | tat | gaa | a gg | g c | ca | ttt | gct | : to | cc | aga | agt | tt | a | tct | 1968 |
| Lys | Ser | Lys | Thr | Val | . Туг | Gli | ı GI | уР | ro | 650 | Атс | 1 5 | er | ALG | 561 | 65 | 55 | 002 | |
| gat | tgt | gta | aat | +=+ | att | ; gta | а са | g g | ac | agc | aaa | a a | ta | cag | ctt | CC | ca | att | 2016 |
| Asp | Cys | Val | . Asr | туз С | : Ile | e Va. | I GI | n A 6 | .sp :65 | ser | гλ: | 5 1 . | тe | GIII | 670 | | | 110 | |
| ata | cag | cto | | | a gto | g tg | ggc | t g | aa | gca | gto | g c | ac | tat | gtg | to | ct | gga | 2064 |
| Ile | Gln | Let | ı Arç | Ly | s Val | L Tr | 68 9 A J | .a G 10 | ilu | Ата | ٧a. | L п | 15 | 685 | Vai | Ď. | - | 02.7 | 2442 |
| cta | aaa | ~ ~ . | . ~ . | tat | age | c ag | g ct | c t | tt | cag | gga | ас | aa | agg | gca | g | ca | atg | 2112 |
| Leu | Lys | Glı | ı Ası | э Ту: | r Se | r Ar 69 | g L€ 5 | eu E | ne | GIII | GI | y G 7 | 00 | ALG | 2110 | | | | 01.60 |
| tta | | | t ct | t ag | a ta | t aa | t go | ct a | aac | tta | ac. | a a | aa | atg | aag | a . a | ac | act | 2160 |
| Leu | ı Seı | Le | ı Le | u Ar | д Ту | r As | n Al | la <i>F</i> | Asn | Leu | Tn 71 | I L | .ys | мес | ту | , д | 211 | 720 | |
| 705 | | . + . | a gc | a to | 71 a ca | a ca | a ci | a a | aaa | qct | aa | a t | tg | gag | ttt | : t | tt | cac | 2208 |
| Leu | ı Ile | e Se | r Al | a Se | r Gl 5 | n Gl | n Le | eu l | Lys | 730 | гу | SL | Jeu | GIU | | 7 | 35 | 1110 | |
| aaa | a ago | at | t ca | a at | t da | c tt | g g | ag a | aga | tac | ag | c g | gag | cag | ato | g a | cg | tat Tvr | 2256 |
| Lys | s Se | c Il | e Gl | n Le | u As | p Le | u G | Lu A | Arg 745 | Tyr | Se | r | iLu | GIL | т мет 750 | _ 1 | ш | Tyr | |
| aa | ~ at: | a to | 74 t tc | - ~- | a aa | a at | a c | ta : | aaa | gca | ı tg | ga | aaa | gaa | ate | g g | aa | gaa Glu | 2304 |
| Gl | y Il | e Se | r Se | r Gl | u Ly | s Me | et L | eu : | Lys | Āla | Tr | p I | Lys | GIU | I Me | t G | lu | Glu | |
| | | 75 | C | | | | - 1 | กบ | | | | | | , 00 | , | | | gat Asp | 2352 |
| aa Lv | g gc | c at a Tl | c ca e Hi | s Tv | r Al | a Gl | Lu V | al | Gly | Val | . Il | .e (| Gly | ту | r Le | ū G | lu | Asp | |
| | 77 | ^ | | | | 71 | 75 | | | | | | / O U | , | | | | | 2400 |
| ca | g at | t at | g to | t tt | g ca | it go | ct g | aa 1111 | atc | Met | 9 99 : G] | 19 (LV : | Let | i Gli | n Ly | s S | Ser | ccc Pro | |
| | _ | | | | 70 | אג | | | | | 7: | <i>,</i> 5 | | | | | | | 0.440 |
| | | a aç | ja co | gt ca | ag gg | ga g | ac t | tg | atg | gaa | a to | ct | cto | g ga | a ca | g d | cgt | gcc Ala | 2448 |
| Ту | r Gl | y Aı | g Aı | g G | ln Gi 05 | Ly A | sp I | eu | Met | 81 | u st | er. | ьес | ı Gı | u Gi | | 815 | , | |
| at | t ga | t c | ta ta | .+ - | | ag t | ta a | ıaa | cac | a a | a c | ct | tca | a ga | t ca | .c | tcc | tac | 2496 |
| Il | e As | p L | eu Ty | yr L | ys G | ln L | eu I | ys | His 825 | Ar | g P | ro | Sei | r As | р Ні 83 | | Ser | r Tyr | |
| | ~- | | ~~ ~. | 20 ca. c. | an a | ta a | t.or a | aaa | ato | at | t g | tg | ca | c ac | t gt | g | cag | g agt n Ser | 2544 |
| a g S∈ | er As | sp S | er T | hr G | lu M | et V | aı ı | yys. | Ιle | : Il | e V | al | Hi: | s Th | | 11 | Glr | n Ser | |
| _ | ·~ ~ | | 35 at a | ta ^ | tc a | ag g | - a a | 340 cta | ttt | : aa | t c | at | tt | g ag | c aa | ıg | tt | g ttg | 2592 |
| Ca Gl | ag ga Ln As | ac c | gt y rg V | al L | eu L | ys G | lu : | Leu | Phe | e Gl | ун | is | пе | u se | r Ly | /S | Le | u Lev | l |
| | 0.1 | - 0 | | | | × | כל | | | | | | 00 | U | | | | | |
| g | gc to | gt a | ag c | ag a | ag a | tt a | itt Te | gat Asp | Lei | a Ct u Le | u P | ro | Ly | s Va | al G | lu | Va | g gcc 1 Ala 880 | |
| ^ . | ~ F | | | | 9 | (70) | | | | | 0 | ,,, | | | | | | | |
| C. | tc a | gt a | at a | tc a | aa g | jaa 🤉 | gct | gac | aa | t ac | et g | tc | at | g tt | c a | cg | ca | g gga | 1 ∠000 |

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Leu Ser Asn Ile Lys Glu Ala Asp Asn Thr Val Met Phe Met Gln Gly
                                    890
                885
aaa agg cag aaa gaa ata tgg cat ctc ctt aaa att gcc tgt aca cag
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Lys Arg Gln Lys Glu Ile Trp His Leu Leu Lys Ile Ala Cys Thr Gln
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            900
agt tot goo ogo tot ott gta gga too agt ota gaa ggt goa gta aco
                                                                     2784
Ser Ser Ala Arg Ser Leu Val Gly Ser Ser Leu Glu Gly Ala Val Thr
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                            920
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cct cag aca tca gca tgg ctg ccc ccg act tca gca gaa cat gat cat
                                                                     2832
Pro Gln Thr Ser Ala Trp Leu Pro Pro Thr Ser Ala Glu His Asp His
                        935
tet etg tea tgt gtg gta act ect caa gat ggg gag act tea gea caa
                                                                     2880
Ser Leu Ser Cys Val Val Thr Pro Gln Asp Gly Glu Thr Ser Ala Gln
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atg ata gaa gaa aat ttg aac tgc ctt ggc cat tta agc act att att
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Met Ile Glu Glu Asn Leu Asn Cys Leu Gly His Leu Ser Thr Ile Ile
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                965
cat gag gca aat gag gaa cag ggc aat agt atg atg aat ctt gat tgg
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His Glu Ala Asn Glu Glu Gln Gly Asn Ser Met Met Asn Leu Asp Trp
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  Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
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  Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
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  Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
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  Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
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                  85
  Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
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  Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
                              120
  Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
                                               140
                          135
  Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
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                      150
  Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
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                  165
  Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
```

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185
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
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Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
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Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
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                 230
Gly Leu Arg Ser Arg Ala Gln Ala Ser Asn Ser Thr Met Glu Arg Pro
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           245
Pro Gly Leu Arg Pro Gly Ala Gly Gly Pro Trp Glu Met Arg Glu Arg
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         260
Leu Gly Thr Gly Gly Phe Gly Asn Val Cys Leu Tyr Gln His Arg Glu
                         280
Leu Asp Leu Lys Ile Ala Ile Lys Ser Cys Arg Leu Glu Leu Ser Thr
                                      300
                     295
Lys Asn Arg Glu Arg Trp Cys His Glu Ile Gln Ile Met Lys Lys Leu
                  310
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Asn His Ala Asn Val Val Lys Ala Cys Asp Val Pro Glu Glu Leu Asn
                         330
              325
Ile Leu Ile His Asp Val Pro Leu Leu Ala Met Glu Tyr Cys Ser Gly
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Gly Asp Leu Arg Lys Leu Leu Asn Lys Pro Glu Asn Cys Cys Gly Leu
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Lys Glu Ser Gln Ile Leu Ser Leu Leu Ser Asp Ile Gly Ser Gly Ile
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Arg Tyr Leu His Glu Asn Lys Ile Ile His Arg Asp Leu Lys Pro Glu
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Asn Ile Val Leu Gln Asp Val Gly Gly Lys Ile Ile His Lys Ile Ile
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 Asp Leu Gly Tyr Ala Lys Asp Val Asp Gln Gly Ser Leu Cys Thr Ser
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 Phe Val Gly Thr Leu Gln Tyr Leu Ala Pro Glu Leu Phe Glu Asn Lys
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 Glu Cys Ile Ala Gly Tyr Arg Pro Phe Leu His His Leu Gln Pro Phe
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 Thr Trp His Glu Lys Ile Lys Lys Lys Asp Pro Lys Cys Ile Phe Ala
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 Cys Glu Glu Met Ser Gly Glu Val Arg Phe Ser Ser His Leu Pro Gln
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 Pro Asn Ser Leu Cys Ser Leu Ile Val Glu Pro Met Glu Asn Trp Leu
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 Gln Leu Met Leu Asn Trp Asp Pro Gln Gln Arg Gly Gly Pro Val Asp
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 Leu Thr Leu Lys Gln Pro Arg Cys Phe Val Leu Met Asp His Ile Leu
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 Asn Leu Lys Ile Val His Ile Leu Asn Met Thr Ser Ala Lys Ile Ile
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  Ser Phe Leu Leu Pro Pro Asp Glu Ser Leu His Ser Leu Gln Ser Arg
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                              585
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                          600
  Glu Thr Gly Ile Ser Leu Asp Pro Arg Lys Pro Ala Ser Gln Cys Val
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  Leu Asp Gly Val Arg Gly Cys Asp Ser Tyr Met Val Tyr Leu Phe Asp
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                   630
  Lys Ser Lys Thr Val Tyr Glu Gly Pro Phe Ala Ser Arg Ser Leu Ser
                                 650
               645
  Asp Cys Val Asn Tyr Ile Val Gln Asp Ser Lys Ile Gln Leu Pro Ile
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  Ile Gln Leu Arg Lys Val Trp Ala Glu Ala Val His Tyr Val Ser Gly
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                           680
```

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        695 700
 690
Leu Ser Leu Leu Arg Tyr Asn Ala Asn Leu Thr Lys Met Lys Asn Thr
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Leu Ile Ser Ala Ser Gln Gln Leu Lys Ala Lys Leu Glu Phe Phe His
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           725
Lys Ser Ile Gln Leu Asp Leu Glu Arg Tyr Ser Glu Gln Met Thr Tyr
                            745
Gly Ile Ser Ser Glu Lys Met Leu Lys Ala Trp Lys Glu Met Glu Glu
                                          765
                        760
Lys Ala Ile His Tyr Ala Glu Val Gly Val Ile Gly Tyr Leu Glu Asp
                                      780
                     775
Gln Ile Met Ser Leu His Ala Glu Ile Met Gly Leu Gln Lys Ser Pro
                                   795
                 790
Tyr Gly Arg Arg Gln Gly Asp Leu Met Glu Ser Leu Glu Gln Arg Ala
                               810
             805
Ile Asp Leu Tyr Lys Gln Leu Lys His Arg Pro Ser Asp His Ser Tyr
                           825
         820
Ser Asp Ser Thr Glu Met Val Lys Ile Ile Val His Thr Val Gln Ser
                                           845
                      840
Gln Asp Arg Val Leu Lys Glu Leu Phe Gly His Leu Ser Lys Leu Leu
                             860
           855
Gly Cys Lys Gln Lys Ile Ile Asp Leu Leu Pro Lys Val Glu Val Ala
                         875
       870
Leu Ser Asn Ile Lys Glu Ala Asp Asn Thr Val Met Phe Met Gln Gly
                     890 895
          885
Lys Arg Gln Lys Glu Ile Trp His Leu Leu Lys Ile Ala Cys Thr Gln
                            905
         900
 Ser Ser Ala Arg Ser Leu Val Gly Ser Ser Leu Glu Gly Ala Val Thr
                                          925
                         920
Pro Gln Thr Ser Ala Trp Leu Pro Pro Thr Ser Ala Glu His Asp His
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                   935
 Ser Leu Ser Cys Val Val Thr Pro Gln Asp Gly Glu Thr Ser Ala Gln
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                 950
Met Ile Glu Glu Asn Leu Asn Cys Leu Gly His Leu Ser Thr Ile Ile
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 Ser Trp Leu Thr Glu
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|--|-----------|------------|------------|------------|------------|-----------|-------------|------------|------------|------------|-----------|------------|-----------|--------|---------------|-----------------|-----|
| Met Glu Arg Pro Pro Gly Leu Arg Pro Gly Ala dry Gry Fro Fro Argonization 1 | a+~ | a a a | caa | ccc | cca | aaa | cta · | caa | ccq | qqc | gcg | ggc | ggg | ccc | tgg | gag | 48 |
| ### att ggg ggg cgg ctg ggc acc ggc ggc ttc ggg aac gtc tgt ctg acc ge ggc ggc ttc ggg acc ggt ctg ggc acc ggc ggc ttc ggg acc gtc tgt ctg tacc gas met Arg Glu Arg Leu Gly Thr Gly Gly Phe Gly Asn Val Cys Leu Tyr 20 20 25 25 25 25 26 28 28 Leu Gly Phe Gly Asn Val Cys Leu Tyr 20 20 25 25 28 26 28 pt ggt cat tgt gtc cta gtc cta gtc cta gtc cta gtc cta gtc cta gtc cta gtc cta gtc cta gtc cta gtc cta gtc cta gtc cta gtc cta gtc cta gtc cta gtc agt acc aaa acc ag ag acc ggt gtc cat aga atc cag att 192 att gtc cta gtc agt gtc cta gtc aga atc cta gtc atc gtc gtc gtc gtc gtc gtc gtc gtc gtc g | Met | Glu | Arg | Pro | Pro | Gly | Leu | Arg | Pro | GLY | Ala | Gly | Gly | Pro | TTP | Glu | |
| Met Arg Glu Arg Leu Gly Thr Gly Gly She Gly Ash val Cys Leu 197 20 22 23 23 24 25 26 26 27 28 28 28 28 29 29 20 20 20 20 20 20 20 20 | 1 | | ~~~ | ~~~ | ota ota | aac | acc | aac | | | aaa | aac | atc | tgt | ctg | tac | 96 |
| cag cat cgg gaa ctt gat ctc aaa ata gca att aag tct tgt cgc cta 144 Gln His Arg Glu Leu Asp Leu Lys 11e Ala Ile Lys Ser Cys Arg Leu 40 35 40 3gg cta agt acc aaa aac aga gaa cga tgg tgc cat gaa atc cag att 192 610 Leu Ser Thr Lys Asn Arg Glu Arg Trp Cys His Glu Ile Gln Ile 50 50 55 50 55 60 31 81g aga aga ttg aac cat gcc aat gtt gta aag gcc tgt gat gtt cct 240 Met Lys Lys Leu Asn His Ala Asn Val Val Lys Ala Cys Asp Val Pro 75 60 75 80 610 Glu Leu Asn Ile Leu Ile His Asp Val Pro Leu Leu Ala Met Glu 95 610 Glu Leu Asn Ile Leu Ile His Asp Val Pro Leu Leu Ala Met Glu 95 70 80 336 80 Glu Glu Asp Ileu 100 105 110 110 110 12t tg ga ctt daa gaa agc cag at ctt ctt ttt aca aca cag aaa 336 12t tg gg at cg ga at tg gaa cac at at ttg Glu Ser Gln Ile Leu Ser Leu Leu Ser Asp Ile 120 12t tg gg at tcg at ttg gaa aca at at at ctt tta cta agt gat at aca cac gaa aca 120 12t tg gga tt gga tat gca aga aca at at agt ctt ta cat gat gat at aca <td< td=""><td>Met</td><td>cgg Arg</td><td>gag Glu</td><td>Arg</td><td>Leu</td><td>Gly</td><td>Thr</td><td>Gly</td><td>Gly</td><td>Phe</td><td>Gly</td><td>Asn</td><td>Val</td><td>Cys</td><td>Leu</td><td>Tyr</td><td></td></td<> | Met | cgg Arg | gag Glu | Arg | Leu | Gly | Thr | Gly | Gly | Phe | Gly | Asn | Val | Cys | Leu | Tyr | |
| GIN His Arg Glu Leu Asp Leu Lys 11e Ala lie bys 45 gag cta agt acc aaa aac aga gaa cga tgg tgc cat gaa atc cag att 192 Glu Leu Ser Thr Lys Asn Arg Glu Arg Trp Cys His Glu Iie Gln Iie 50 atg aag aag ttg aac cat gcc aat gtt gta aag gcc tgt gat gtt cct 240 Met Lys Lys Leu Asn His Ala Asn Val Val Lys Ala Cys Asp Val Pro 60 atg aag aat ttg aat att ttg att cat gat gtg cct ctt cta gca atg gaa 288 Glu Glu Leu Asn 11e Leu Iie His Asp Val Pro Leu Leu Ala Met Glu 95 tac tgt tct gga gga gat ctc cga aag ctg ctc aac aaa cca gaa aat 797 Cys Ser Gly Gly Asp Leu Arg Lys Leu Leu Asn Lys Pro Glu Asn 105 tgt tgt gga ctt aaa aga agc agat act ttt tta cta agt gat ata 288 Cys Cys Gly Leu Lys Glu Ser Gln Iie Leu Ser Leu Leu Ser Asp Iie 115 110 tgt tgt gga ctt aaa gaa agc aga aac aaa att ata cat cga gat 384 Clys Cys Gly Leu Lys Glu Ser Gln Iie Leu Ser Leu Leu Ser Asp Iie 115 110 ggt tct gga ctt aga tat ttg cat gaa aac aaa att ata cat cga gat 432 Cly Ser Gly Iie Arg Tyr Leu His Glu Asn Lys Iie Iie His Arg Asp 130 cta aaa cct gaa aac at gtt ctt cag gat gtt gdt gaa gaa at ata Leu Lys Pro Glu Asn Iie Val Leu Gln Asp Val Gly Gly Lys Iie Iie 160 Cat aaa ata att gat ctg gga tat gcc aaa gat gtt gdt gaa gaa at ata Leu Lys Pro Glu Asn 11e Val Leu Gln Asp Val Asp Gln Gly Ser 175 ctg tgt aca tctt tt gtg ga aca ctg caa gat att ctg gcc cca gag act 181 Leu Lys Fro Glu Asn Lys Pro Tyr Thr Ala Lys Asp Val Asp Gln Gly Ser 175 ctg tgt aca tctt tt gtg ga aca ctg caat att gcc caat gat att gcc caat gat att gcc caat gat att gcc caat gat att gcc ga tat gcc caat gat att gcc ga caat gat att gcc gat gat gat caa gag agt ccc asp 180 ttt gag aat aag cct taa caa gac aca ctg gat att agg cct ttt ttg gac cat gat gat gat gat gat gat gat gat gat g | a24 | cat | caa | maa | ctt | gat | ctc | aaa | ata | qca | att | aag | tct | tgt | cgc | cta | 144 |
| gag cta agt acc aaa aac aga gaa cga tgg tgc cat gaa atc cag att 192 Glu Leu Ser Thr Lys Asn Arg Glu Arg Tro Cys His Glu IIe 50 60 aag aag ttg aac cat gcc aat gtt gta aag gcc tgt gat gtt cct 240 Met Lys Lys Leu Asn His Ala Asn Val Val Lys Ala Cys Asp Val Pro 80 80 gaa gaa ttg aat att ttg att cat gat gtg cct ctt cta gca atg gaa 288 Glu Glu Leu Asn Ile Leu Ile His Asp Val Pro Leu Leu Ala Met Glu 95 tac tgt tct gga gga gat ctc cga aag ctg ctc aac aac aca gaa aat 336 Tyr Cys Ser Gly Gly Asp Leu Arg Lys Leu Leu Asn Lys Pro Glu Asn 100 tgt tgt gga ctt aac gaa ag cag cag at ctt ctt tta cta cta agt gat at 336 Cys Cys Gly Leu Lys Glu Ser Gln Ile Leu Ser Leu Leu Ser Asp Ile 120 ggg tt tgg att cga tt tg cat gaa aca cat att ttg cat gaa aca cat att atc act cga gat 432 Gly Ser Gly Ile Arg Tyr Leu His Glu Asn Lys Ile Ile His Arg Asp 130 135 ta aaa act gaa act gaa act gga ac ag act gt ggg gga ag at a at a | Gln | His | Arg 35 | Glu | Leu | Asp | Leu | Lys 40 | Ile | Ala | тте | гуѕ | ser 45 | Cys | ALG | пеп | |
| Simple Ser Thr Lys Asn Arg Glu Arg Trp Cys His Glu Tee Glu Tee Ser | σασ | cta | ant | acc | aaa | aac | aga | gaa | cga | tgg | tgc | cat | gaa | atc | cag | att | 192 |
| atg aag aag ttg aac cat goc aat got got aag atg goc aat got aag atg goc aat goc aag atg goc aat goc aag atg goc aat goc aag atg goc aat goc aag atg goc aag | Glu | Leu 50 | Ser | Thr | Lys | Asn | Arg 55 | Glu | Arg | Trp | Cys | ніs 60 | GIU | ire | GIII | 116 | 240 |
| Met Lys Lys Leu Asn His Ala Asn Val Lys Asp Val For Bo 65 70 75 80 62 70 75 80 63 70 75 80 63 70 75 80 63 70 75 80 64 81 70 80 82 70 80 82 20 82 228 80 <td>atg</td> <td>aag</td> <td>aag</td> <td>ttg</td> <td>aac</td> <td>cat</td> <td>gcc</td> <td>aat</td> <td>gtt</td> <td>gta</td> <td>aag</td> <td>gcc</td> <td>tgt</td> <td>gat</td> <td>gtt</td> <td>CCT</td> <td>240</td> | atg | aag | aag | ttg | aac | cat | gcc | aat | gtt | gta | aag | gcc | tgt | gat | gtt | CCT | 240 |
| gaa gaa ttg aat att ttg att cat gat gtg cct ctt cta gaa atg gaa 288 Glu Leu Asn Ile Leu Ile His Asp Val Pro Leu Leu Ala Met Glu 85 90 tac tgt tct gga gga gat ctc cga aag ctg ctc aac aac cca gaa aat 100 100 105 100 100 105 110 110 105 110 110 | Met 65 | Lys | Lys | Leu | Asn | His 70 | Ala | Asn | Val | Val | ьуs 75 | Ата | Cys | Asp | vaı | 80 | 000 |
| Sample Leu Leu Ranger Sample | ~ ~ ~ | gaa | ttg | aat | att | ttg | att | cat | gat | gtg | cct | ctt | cta | gca | atg | gaa | 288 |
| tac tgt tct gga gga gat ctc cga aag ctg ctg ctc aat at at cat cga gat ctc cga aag ctc ctc aat cat at cat cat ctc ctc cat cat | Glu | Glu | Leu | Asn | Ile 85 | Leu | Ile | His | Asp | Va⊥ 90 | Pro | ьeu | Leu | Ala | 95 | Giu | 226 |
| Tyr Cys Ser Gly Gly Asp Leu Arg Lys Leu Leu Ash Lys Flo Glu Ash 100 105 110 10 | tac | tgt | tct | gga | gga | gat | ctc | cga | aag | ctg | ctc | aac | aaa | cca | gaa | aat | 336 |
| tyt tyt gga ctt aaa gaa agc cag cag ctt tu cu ser Aar Cag aac cat cag aac aac aat cat cag gaa aac aat at cat cag gat day day <td>Tyr</td> <td>Суз</td> <td>Ser</td> <td>Gly</td> <td>Gly</td> <td>Asp</td> <td>Leu</td> <td>Arg</td> <td>Lys 105</td> <td>Leu</td> <td>Leu</td> <td>Asn</td> <td>гÀг</td> <td>110</td> <td>GIU</td> <td>ASII</td> <td>204</td> | Tyr | Суз | Ser | Gly | Gly | Asp | Leu | Arg | Lys 105 | Leu | Leu | Asn | гÀг | 110 | GIU | ASII | 204 |
| Cys Cys Gly Leu Lys Glu Ser Gln 11e Leu Ser Leu Leu Ser Asp 11e 115 120 1215 127 128 139 130 130 130 131 130 131 130 130 131 130 130 131 130 130 130 140 150 161 150 160 161 165 160 165 160 165 160 165 160 170 181 182 183 184 184 184 184 185 184 185 184 185 186 187 187 187 187 187 187 187 | tgt | tgt | gga | ctt | aaa | gaa | agc | cag | ata | ctt | tct | tta | cta | agt | gat | ata | 304 |
| Gly Ser Gly Ile Arg Tyr Leu His Glu Asn Lys Ile Ile His Arg Asp 130 | Cys | Cys | Gly | Leu | Lys | Glu | Ser | Gln 120 | Ile | Leu | Ser | Leu | 125 | ser | АЅР | 116 | 132 |
| 130 | ggg | tct | ggg | att | cga | tat | ttg | cat | gaa | aac | aaa | att | ata | cat | Cga | gat Asn | 432 |
| Ceta aaa cct gaa aac ata gtt ctt cay gtt gyt gyd gyd gyd gyd gyd gyd gyd gyd gyd gyd | | 130 | | | | | 135 | | | | | 140 | | | | | 490 |
| 145 | cta | aaa | cct | gaa | aac | ata | gtt | ctt | cag | gat | gtt | ggt | gga | aag | ata | Tla | 400 |
| Cat aaa ata att gat ctg gga tat gcc aaa gat gtt gat caa gga agt 528 His Lys Ile Ile Asp Leu Gly Tyr Ala Lys Asp Val Asp Gln Gly Ser 165 Ctg tgt aca tct ttt gtg gga aca ctg cag tat ctg gcc cca gag ctc 576 Leu Cys Thr Ser Phe Val Gly Thr Leu Gln Tyr Leu Ala Pro Glu Leu 180 180 ttt gag aat aag cct tac aca gcc act gtt gat tat tgg agc ttt ggg 624 Phe Glu Asn Lys Pro Tyr Thr Ala Thr Val Asp Tyr Trp Ser Phe Gly 195 acc atg gta ttt gaa tgt att gct gga tat agg cct ttt ttt gc at cat 672 Thr Met Val Phe Glu Cys Ile Ala Gly Tyr Arg Pro Phe Leu His His 210 ctg cag cca ttt acc tgg cat gag aag att aag aag aag ag ag ag cca att t gca aga gag ag | | Lys | Pro | Glu | Asn | | Val | Leu | Gin | Asp | 155 | сту | GTÄ | цуз | 110 | 160 | |
| His Lys Ile Ile Asp Leu Gly Tyr Ala Lys Asp Val Asp Cal Gly Tyr Ala Lys Asp Val Asp Cal Gly Tyr Ala Lys Asp Val Asp Cal Gly Tyr Info 175 | 145 | | | _ 4_ 4- | ~~+ | 150 | ~~~ | tat | acc | aaa | | att | gat | caa | qqa | | 528 |
| ctg tgt aca tct ttt gtg gga aca ctg cag tat ctg gcc cca gag ctc 576 Leu Cys Thr Ser Phe Val Gly Thr Leu Gln Tyr Leu Ala Pro Glu Leu 180 180 185 190 ttt gag aat aag cct tac aca gcc act gtt gat tat tgg agc ttt ggg 624 Phe Glu Asn Lys Pro Tyr Thr Ala Thr Val Asp Tyr Trp Ser Phe Gly 195 200 205 205 624 acc atg gta ttt gaa tgt att gct gag act gag cat gag cat gag cag cag act gag cat gag cag act gag cag act gag cag act gag gag gat gag gag gat gag gag gat gag gag | His | Lys | Ile | Ile | Asp 165 | Leu | Gly | Tyr | Ala | ьуs 170 | Asp | vaı | АБР | GIII | 175 | , | |
| Leu Cys Thr Ser Phe Val Gly Thr Leu Gln Tyr Leu Gln Tyr Leu He File File File File File File File Fil | cta | tat | aca | tct | +++ | ata | gga | aca | ctg | cag | tat | ctg | gcc | cca | gag | ctc | 576 |
| The transform of the transform of the transform of the transform of the transform of the transform of the transform of the transform of the transform of the transform of the transform of transform of the transform of transfo | Leu | Суѕ | Thr | Ser 180 | Phe | · Val | Gly | Thr | Leu 185 | GIn | Tyr | Leu | Ala | 190 |) | пец | |
| Phe Glu | ttt | gag | aat | aag | cct | tac | aca | gcc | act | gtt | gat | tat | . tgg | ago | ttt | ggg | 624 |
| Thr Met Val Phe Glu Cys Ile Ala Gly Tyr Arg Pro Phe Leu His His 210 | Phe | Glu | Asn 195 | Lys | Pro | Tyr | Thr | Ala 200 | Thr | Val | Asp | туг | 205 | ser | FILE | GIY | 672 |
| Thr Met Val Phe Glu Cys Ile Ala Gly Tyr Arg Pro He Leu Als Misson 210 215 220 220 215 220 220 215 220 220 230 230 235 240 240 225 230 230 235 240 240 245 245 245 250 255 255 255 240 250 255 245 245 245 245 250 250 255 255 255 255 255 255 255 25 | acc | atg | gta | ttt | gaa | ı tgt | att | gct | gga | tat | agg | cct | : ttt | . ttg | , cat | cat | 6/2 |
| ctg cag cag cag cag cag cag cag cag cag ca | Thr | Met | . Val | . Phe | e Glu | ı Cys | 11e 215 | Ala | . GIY | 'l'yr | Arc | 220 |) | net | ı nıs | , 1113 | 720 |
| 225 tgt ata ttt gca tgt gaa gag atg tca gga gaa gtt cgg ttt agc agc 768 Cys Ile Phe Ala Cys Glu Glu Met Ser Gly Glu Val Arg Phe Ser Ser 245 cat tta cct caa cca aat agc ctt tgt agt tta ata gta gaa ccc atg His Leu Pro Gln Pro Asn Ser Leu Cys Ser Leu Ile Val Glu Pro Met 260 gaa aac tgg cta cag ttg atg ttg aat tgg gac cct cag cag aga gga Glu Asn Trp Leu Gln Leu Met Leu Asn Trp Asp Pro Gln Gln Arg Gly 275 gga cct gtt gac ctt act ttg aag cag cca aga tgt ttt gta tta atg Gly Pro Val Asp Leu Thr Leu Lys Gln Pro Arg Cys Phe Val Leu Met 290 gat cac att ttg aat ttg aag ata gta cac atc cta aat atg act tct Asp His Ile Leu Asn Leu Lys Ile Val His Ile Leu Asn Met Thr Ser 320 320 320 | cto | cag | cca | a ttt | acc | tgg | cat | gag | aag | att | aaq | j aag | g aag | ggat | Dr | a aay | 720 |
| Cys Ile Phe Ala Cys Glu Glu Met Ser Gly Glu Val Arg File Ser Ser 245 cat tta cct caa cca aat agc ctt tgt agt tta ata gta gaa ccc atg His Leu Pro Gln Pro Asn Ser Leu Cys Ser Leu Ile Val Glu Pro Met 260 gaa aac tgg cta cag ttg atg ttg aat tgg gac cct cag cag aga gga Glu Asn Trp Leu Gln Leu Met Leu Asn Trp Asp Pro Gln Gln Arg Gly 275 gga cct gtt gac ctt act ttg aag cag cca aga tgt ttt gta tta atg Gly Pro Val Asp Leu Thr Leu Lys Gln Pro Arg Cys Phe Val Leu Met 290 gat cac att ttg aat ttg aag ata gta cac atc cta aat atg act tct Asp His Ile Leu Asn Leu Lys Ile Val His Ile Leu Asn Met Thr Ser 320 | 225 | : | | | | 230 |) | | | | 233 |) | | | | 240 | 768 |
| cat tta cct caa cca aat agc ctt tgt agt tta ata gta gaa ccc atg His Leu Pro Gln Pro Asn Ser Leu Cys Ser Leu Ile Val Glu Pro Met 260 gaa aac tgg cta cag ttg atg ttg aat tgg gac cct cag cag aga gga Glu Asn Trp Leu Gln Leu Met Leu Asn Trp Asp Pro Gln Gln Arg Gly 275 gga cct gtt gac ctt act ttg aag cag cca aga tgt ttt gta tta atg Gly Pro Val Asp Leu Thr Leu Lys Gln Pro Arg Cys Phe Val Leu Met 290 gat cac att ttg aat ttg aag ata gta cac atc cta aat atg act tct Asp His Ile Leu Asn Leu Lys Ile Val His Ile Leu Asn Met Thr Ser 320 | tgt | : ata | a ttt | gca | a tgt | t gaa | gag | ato | , tca | gga | gaa | a gti | cgq | y LLI | agi | r Ser | 700 |
| His Leu Pro Gln Pro Asn Ser Leu Cys Ser Leu Ile Val Glu Pro Met 260 265 270 gaa aac tgg cta cag ttg atg ttg aat tgg gac cct cag cag aga gga Glu Asn Trp Leu Gln Leu Met Leu Asn Trp Asp Pro Gln Gln Arg Gly 275 gga cct gtt gac ctt act ttg aag cag cca aga tgt ttt gta tta atg Gly Pro Val Asp Leu Thr Leu Lys Gln Pro Arg Cys Phe Val Leu Met 290 gat cac att ttg aat ttg aag ata gta cac atc cta aat atg act tct Asp His Ile Leu Asn Leu Lys Ile Val His Ile Leu Asn Met Thr Ser 320 | _ | | | | 24 | 5 | | | | 250 |) | | | | 23 | J | 816 |
| gaa aac tgg cta cag ttg atg ttg aat tgg gac cct cag cag aga gga Glu Asn Trp Leu Gln Leu Met Leu Asn Trp Asp Pro Gln Gln Arg Gly 275 gga cct gtt gac ctt act ttg aag cag cca aga tgt ttt gta tta atg Gly Pro Val Asp Leu Thr Leu Lys Gln Pro Arg Cys Phe Val Leu Met 290 gat cac att ttg aat ttg aag ata gta cac atc cta aat atg act tct Asp His Ile Leu Asn Leu Lys Ile Val His Ile Leu Asn Met Thr Ser 320 | cat | t tta | a cct | t caa | a cca | a aat | ago | : ctt | : tgt | agt | tta | a ata | a gta | a gad | a cc | o Met | 010 |
| gaa aac tgg cta cag ttg atg ttg aat tgg gac cet day day day gac cet atg atg ttg gac cet atg atg cag ca aga tgt ttt gta tta atg gag cet gt gac cet act ttg aag cag cca aga tgt ttt gta tta atg gar cet atg atg cag ca atg ttt gta tta atg gar cac atg cac atg ttg atg cac atg cac atg atg cac a | | | | 26 | n | | | | 26 | • | | | | 21 | U | | 864 |
| gga cct gtt gac ctt act ttg aag cag cca aga tgt ttt gta tta atg 912 Gly Pro Val Asp Leu Thr Leu Lys Gln Pro Arg Cys Phe Val Leu Met 290 295 300 gat cac att ttg aat ttg aag ata gta cac atc cta aat atg act tct Asp His Ile Leu Asn Leu Lys Ile Val His Ile Leu Asn Met Thr Ser 320 | ga | a aad | c tg | g ct | a ca | g tt | g ato | ; tto | g aat | t tg | g ga | C CC | t ca | g ca | g ag n Ar | a gga a Glv | 004 |
| gga cct gtt gac ctt act ttg aag cag cca aga cgt eet gta set sta Gly Pro Val Asp Leu Thr Leu Lys Gln Pro Arg Cys Phe Val Leu Met 290 295 300 gat cac att ttg aat ttg aag ata gta cac atc cta aat atg act tct 960 Asp His Ile Leu Asn Leu Lys Ile Val His Ile Leu Asn Met Thr Ser | | | 27 | 5 | | | | 28 |) | | | | 20 | J | | | 912 |
| Gly Pro Val Asp Leu Thr Leu Lys Gln Pro Arg Cys Fhe Val Hed Mcc 290 295 300 gat cac att ttg aat ttg aag ata gta cac atc cta aat atg act tct 960 Asp His Ile Leu Asn Leu Lys Ile Val His Ile Leu Asn Met Thr Ser 320 | gg | a cc | t gt | t ga | c ct | t ac | t tt | g aa | g cad | g cc | a ag | a tg | t tt | t gt | a CC 1 T.A | a alg 11 Met | 912 |
| Asp His Ile Leu Asn Leu Lys Ile Val His Ile Leu Ash Met III 301 | Gl | y Pr | o Va | l As | p Le | u Th | r Lei 29 | а Ly. 5 | s Gli | n Pr | o Ar | g cy 30 | 0 | e va | т пе | u nec | 960 |
| Asp His Ile Leu Asn Leu Lys Ile Val His Ile Leu Ash Met III 301 | ga | t ca | c at | t tt | g aa | t tt | g aa | g at | a gt | a ca | c at | c ct | a aa | t at | y ac + mh | r Ser | 300 |
| | As | p Hi | s Il | e Le | u As | n Le | u Ly | s Il | e Va | T HI | SII | е ге | u AS | 11 116 | . L 11 | I JCI | |

| | aag | | | +-+ | +++ | ata | ++> | CCa | cct | aat | maa | agt | ctt | cat | tca | 1008 |
|------------|------------|------------|------------|------------|-----|------------|------------|------------|------------|-------|------------|---|------------|------------|-----|-------|
| gca Ala | aag Lys | Ile | Ile | Ser 325 | Phe | Leu | Leu | Pro | Pro 330 | Asp | Glu | Ser | Leu | His 335 | Ser | 1000 |
| cta | cag | tct | cgt | att | gag | cgt | gaa | act | gga | ata | aat | act | ggt | tct | caa | 1056 |
| Leu | Gln | Ser | Arg 340 | Ile | Glu | Arg | Glu | Thr 345 | Gly | Ile | Asn | Thr | Gly 350 | Ser | Gln | |
| qaa | ctt | ctt | tca | gag | aca | gga | att | tct | ctg | gat | cct | cgg | aaa | cca | gcc | 1104 |
| Glu | Leu | Leu 355 | Ser | Glu | Thr | Gly | Ile 360 | Ser | Leu | Asp | Pro | Arg 365 | Lys | Pro | Ala | |
| tct | caa | tat | att | cta | gat | gga | gtt | aga | ggc | tgt | gat | agc | tat | atg | gtt | 1152 |
| Ser | Gln 370 | Cys | vаl | Leu | Āsp | ĞÎy 375 | Val | Arg | Gly | Cys | Asp 380 | Ser | Tyr | Met | Val | |
| tat | tta | ttt | gat | aaa | agt | aaa | act | gta | tat | gaa | ggg | cca | ttt | gct | tcc | 1200 |
| Tyr | Leu | Phe | Asp | Lys | Ser | Lys | Thr | Val | Tyr | Glu | Gly | Pro | Phe | Ala | Ser | |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 | |
| aga | agt | tta | tct | gat | tgt | gta | aat | tat | att | gta | cag | gac | agc | aaa | ata | 1248 |
| Arg | Ser | Leu | Ser | Asp 405 | Cys | Val | Asn | Tyr | 11e 410 | Val | Gln | Asp | Ser | Lys 415 | Ile | |
| cag | ctt | cca | att | ata | cag | ctg | cgt | aaa | gtg | tgg | gct | gaa | gca | gtg | cac | 1296 |
| | Leu | | 420 | | | | | 425 | | | | | 430 | | | 1244 |
| tat | gtg | tct | gga | cta | aaa | gaa | gac | tat | agc | agg | ctc | ttt | cag | gga | caa | 1344 |
| _ | Vaĺ | 435 | | | | | 440 | | | | | 445 | | | | 1200 |
| agg | gca | gca | atg | tta | agt | ctt | ctt | aga | tat | aat | gct | aac | tta | aca | aaa | 1392 |
| _ | Ala 450 | | | | | 455 | | | | | 460 | | | | | 1440 |
| atg | aag | aac | act | ttg | atc | tca | gca | tca | caa | caa | ctg | aaa | gct | aaa | ttg | 1440 |
| Met | Lys | Asn | Thr | Leu | | Ser | Ala | Ser | Gln | | Leu | ьys | Ата | гàг | Leu | |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 | 1400 |
| gag | ttt | ttt | cac | aaa | agc | att | cag | ctt | gac | ttg | gag | aga | tac | agc | gag | 1488 |
| | Phe | | | 485 | | | | | 490 | | | | | 495 | | 1536 |
| cag | atg | acg | tat | ggg | ata | tct | tca | gaa | aaa | atg | cta | aaa | gca | Egg Tr | Tuc | 1336 |
| | Met | | 500 | | | | | 505 | | | | | 510 | | | 1584 |
| gaa | atg Met | gaa | gaa | aag | gcc | atc | Cac | Tur | yct 715 | Glu | yct Val | Glv | Val | Tle | Glv | 1301 |
| | | 515 | | | | | 520 | | | | | 525 | | | | |
| tac | ctg | gag | gat | cag | att | atg | tct | ttg | cat | gct | gaa | atc | atg | ggg | cta | 1632 |
| - | Leu 530 | | | | | 535 | | | | | 540 | | | | | 1.600 |
| cag | aag | agc | ccc | tat | gga | aga | cgt | cag | gga | gac | ttg | atg | gaa | Con | ctg | 1680 |
| | Lys | Ser | Pro | Tyr | | Arg | Arg | GIN | GTA | Asp | Leu | мес | GIU | ser | 560 | |
| 545 | | | | | 550 | | | | | 555 | | Cac | 2012 | cct | | 1728 |
| gaa | cag | cgt | gcc | att | gat | cta | tat | aag | Cln | LLd | Tue | Uie | aya Ara | Pro | Ser | 1720 |
| Glu | Gln | Arg | Ala | 565 | Asp | Leu | Tyr | гуз | 570 | | цуѕ | птэ | ALG | 575 | Ser | |
| ast | cac | taa | tac | | gac | age | aca | gag | | | aaa | atc | att | | | 1776 |
| Asp | His | Ser | Tyr | Ser | Asp | Ser | Thr | Glu | Met | Val | Lys | Ile | Ile | Val | His | |
| | | | 580 | | | | | 585 | | | | | 590 | | | 1004 |
| act | gtg | cag | agt | cag | gac | cgt | gtg | ctc | aag | gag | ctg | דננ | ggt | cat | ttg | 1824 |
| | | 595 | | | | | 600 | | | | | 605 | | | Leu | 1072 |
| ago | aag | ttg | ttg | ggc | tgt | aag | cag | aag | att | att | gat | cta | CTC | CCL | aag | 1872 |
| | 610 | | | | | 615 | | | | | 620 | | | | Lys | 1000 |
| gtg | gaa | gtg | gcc | cto | agt | aat | atc | aaa | gaa | gct | gac | aat | act | gto | atg | 1920 |
| | | Val | . Ala | Leu | | | Ile | Lys | GLu | | | AST | ıınr | val | Met | |
| 625 | , | | | | 630 | | | | | 635 | | <u>ــــــــــــــــــــــــــــــــــــ</u> | | | 640 | 1968 |
| ttc | : atg | cag | gga | aaa | agg | cag | aaa | gaa | ata | t tgg | cat | CTC | CTT | aaa | att | 1900 |
| Phe | Met | Glr | Gly | | | Gln | гÀг | Glu | | | HIS | теп | теп | . цуs | Ile | |
| | | | | 645 |) | | | | 650 | , | | | | 955 | , | |

| gcc Ala | tgt Cys | aca Thr | Gln | agt Ser | tct Ser | gcc Ala | cgc Arg | tct Ser 665 | ctt Leu | gta Val | gga Gly | tcc Ser | agt Ser 670 | cta Leu | gaa Glu | 2016 |
|------------|-------------------|-------------------|-------------------|------------|-------------------|-------------------|-------------------|-------------------|------------|------------|-------------------|-------------------|-------------------|------------|-------------------|------|
| ggt Gly | gca Ala | gta Val 675 | 660 acc Thr | cct Pro | cag Gln | aca Thr | tca Ser 680 | gca | tgg Trp | ctg Leu | ccc Pro | ccg Pro 685 | act | tca Ser | gca Ala | 2064 |
| gaa Glu | cat His 690 | gat | cat His | tct Ser | ctg Leu | tca Ser 695 | tgt | gtg Val | gta Val | act Thr | cct Pro 700 | caa Gln | gat Asp | ggg Gly | gag Glu | 2112 |
| Thr 705 | tca Ser | Ala | Gln | Met | ata Ile 710 | Glu | Glu | Asn | Leu | Asn 715 | Cys | Leu | Gly | His | Leu 720 | 2160 |
| Ser | Thr | Ile | Ile | His 725 | gag Glu | Ala | Asn | Glu | Glu 730 | Gln | Gly | Asn | Ser | Met 735 | Met | 2208 |
| Asn | Leu | Asp | Trp 740 | Ser | tgg Trp | Leu | Thr | Glu 745 | Trp | Val | Pro | Arg | Ala 750 | Arg | Asp | 2256 |
| Pro | Pro | Val 755 | Ala | Thr | atg Met | Val | Ser 760 | Lys | Gly | Glu | Glu | Leu 765 | Phe | Thr | Gly | 2304 |
| Val | Val 770 | Pro | Ile | Leu | gtc Val | Glu 775 | Leu | Asp | Gly | Asp | Val 780 | Asn | Gly | His | Lys | 2352 |
| Phe 785 | Ser | Val | Ser | Gly | gag Glu 790 | Gly | Glu | Gly | Asp | Ala 795 | Thr | Tyr | Gly | Lys | Leu 800 | 2400 |
| Thr | Leu | Lys | Phe | Ile 805 | tgc Cys | Thr | Thr | Gly | Lys 810 | Leu | Pro | Val | Pro | Trp 815 | Pro | 2446 |
| Thr | Leu | Val | Thr 820 | Thr | ctg Leu | Thr | Tyr | Gly 825 | Val | Gln | Cys | Phe | Ser 830 | Arg | Tyr | 2544 |
| Pro | Asp | His 835 | Met | Lys | cag Gln | His | Asp 840 | Phe | Phe | Lys | Ser | Ala 845 | Met | Pro | Glu | 2592 |
| Gly | Tyr 850 | Val | Gln | Glu | cgc Arg | Thr 855 | Ile | Phe | Phe | Lys | Asp 860 | Asp | Gly | Asn | Tyr | 2640 |
| Lys 865 | Thr | Arg | Ala | Glu | gtg Val 870 | Lys | Phe | Glu | Gly | Asp 875 | Thr | Leu | Va⊥ | Asn | 880 | 2688 |
| Ile | Glu | Leu | Lys | Gly 885 | atc Ile | Asp | Phe | Lys | Glu 890 | Asp | Gly | Asn | Ile | Leu 895 | Gly | 2736 |
| His | Lys | Leu | Glu 900 | Tyr | | Tyr | Asn | Ser 905 | His | Asn | Val | Tyr | 11e 910 | Met | Ala | 2784 |
| Asp | Lys | Gln 915 | Lys | Asn | Gly | Ile | Lys 920 | Val | Asn | Phe | Lys | 925 | Arg | HIS | aac Asn acc | 2832 |
| Ile | Glu 930 | Asp | Gly | Ser | Val | Gln 935 | Leu | Ala | Asp | His | Туг 940 | Gln | Gln | Asn | Thr | 2880 |
| Pro 945 | Ile | Gly | Asp | Gly | Pro 950 | Val | Leu | Leu | Pro | Asp 955 | Asn | His | Туг | Leu | 960 | 2928 |
| Thr | Gln | Ser | Ala | Leu 965 | Ser | Lys | Asp | Pro | 970 | Glu H | Lys | Arg | Asp | 975 | | 2976 |
| gtc Val | ctg Leu | ctg Leu | gag Glu 980 | Phe | gtg Val | Thr | gcc Ala | gcc Ala 985 | Gly | l atc | act Thi | Leu | 990 Gly | , Met | g gac : Asp | 2310 |

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350
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Glu Leu Leu Ser Glu Thr Gly Ile Ser Leu Asp Pro Arg Lys Pro Ala
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Ser Gln Cys Val Leu Asp Gly Val Arg Gly Cys Asp Ser Tyr Met Val
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Tyr Leu Phe Asp Lys Ser Lys Thr Val Tyr Glu Gly Pro Phe Ala Ser
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                                     395
Arg Ser Leu Ser Asp Cys Val Asn Tyr Ile Val Gln Asp Ser Lys Ile
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Gln Leu Pro Ile Ile Gln Leu Arg Lys Val Trp Ala Glu Ala Val His
                                      430
                             425
           420
Tyr Val Ser Gly Leu Lys Glu Asp Tyr Ser Arg Leu Phe Gln Gly Gln
                                 445
                          440
       435
Arg Ala Ala Met Leu Ser Leu Leu Arg Tyr Asn Ala Asn Leu Thr Lys
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Met Lys Asn Thr Leu Ile Ser Ala Ser Gln Gln Leu Lys Ala Lys Leu
                                     475
                 470
Glu Phe Phe His Lys Ser Ile Gln Leu Asp Leu Glu Arg Tyr Ser Glu
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              485
Gln Met Thr Tyr Gly Ile Ser Ser Glu Lys Met Leu Lys Ala Trp Lys
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           500
Glu Met Glu Glu Lys Ala Ile His Tyr Ala Glu Val Gly Val Ile Gly
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                         520
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Tyr Leu Glu Asp Gln Ile Met Ser Leu His Ala Glu Ile Met Gly Leu
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Gln Lys Ser Pro Tyr Gly Arg Arg Gln Gly Asp Leu Met Glu Ser Leu
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       550
Glu Gln Arg Ala Ile Asp Leu Tyr Lys Gln Leu Lys His Arg Pro Ser
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Asp His Ser Tyr Ser Asp Ser Thr Glu Met Val Lys Ile Ile Val His
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Thr Val Gln Ser Gln Asp Arg Val Leu Lys Glu Leu Phe Gly His Leu
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Ser Lys Leu Leu Gly Cys Lys Gln Lys Ile Ile Asp Leu Leu Pro Lys
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                      615
Val Glu Val Ala Leu Ser Asn Ile Lys Glu Ala Asp Asn Thr Val Met
                                     635
                  630
Phe Met Gln Gly Lys Arg Gln Lys Glu Ile Trp His Leu Leu Lys Ile
                                 650 655
               645
Ala Cys Thr Gln Ser Ser Ala Arg Ser Leu Val Gly Ser Ser Leu Glu
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Gly Ala Val Thr Pro Gln Thr Ser Ala Trp Leu Pro Pro Thr Ser Ala
                                             685
                680
 Glu His Asp His Ser Leu Ser Cys Val Val Thr Pro Gln Asp Gly Glu
                                          700
                       695
 Thr Ser Ala Gln Met Ile Glu Glu Asn Leu Asn Cys Leu Gly His Leu
                                      715
                   710
 Ser Thr Ile Ile His Glu Ala Asn Glu Glu Gln Gly Asn Ser Met Met
                                  730
               725
 Asn Leu Asp Trp Ser Trp Leu Thr Glu Trp Val Pro Arg Ala Arg Asp
                               745
 Pro Pro Val Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly
                           760
 Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly His Lys
                       775
 Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu
                                   795
                   790
 Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro
                                 810
             805
 Thr Leu Val Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr
                                                 830
                               825
 Pro Asp His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu
                           840
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Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr
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Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg
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Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly
                                 890
               885
His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala
                                                   910
                       905
Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn
                           920
                                               925
Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr
                        935
Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser
                                       955
                    950
Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met
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                 5
 gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc
                                                                       96
 Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
                                25
 gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc
                                                                      144
 Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
                             40
         35
 tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc
                                                                      192
 Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
                                             60
                         55
 ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag
                                                                      240
 Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
                                        75
                     70
                                                                      288
 cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag
 Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
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cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag
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Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
                                                    110
                               105
            100
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc
                                                                      384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
                            120
atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac
                                                                      432
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
                        135
aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac
                                                                      480
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
                    150
ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc
                                                                      528
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                                    170
                                                                      576
gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
                                185
                                                    190
ecc gtg etg etg ecc gae aac eac tae etg age acc eag tee gee etg
                                                                      624
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
                            200
agc aaa gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc
                                                                      672
Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
                                            220
                        215
gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc
                                                                      720
Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
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                    230
gga ctc aga tct cga gct caa gct tcc atg agc gag acg gtc atc atg
                                                                      768
Gly Leu Arg Ser Arg Ala Gln Ala Ser Met Ser Glu Thr Val Ile Met
                                     250
                245
                                                                      816
agc gag acg gtc atc tgt tcc agc cgg gcc act gtg atg ctt tat gat
Ser Glu Thr Val Ile Cys Ser Ser Arg Ala Thr Val Met Leu Tyr Asp
                                265
gat ggc aac aag cga tgg ctc cct gct ggc acg ggt ccc cag gcc ttc
                                                                      864
Asp Gly Asn Lys Arg Trp Leu Pro Ala Gly Thr Gly Pro Gln Ala Phe
                            280
                                                 285
age ege gte cag ate tae cae aae eee aeg gee aat tee ttt ege gte
                                                                      912
Ser Arg Val Gln Ile Tyr His Asn Pro Thr Ala Asn Ser Phe Arg Val
                        295
gtg ggc cgg aag atg cag ccc gac cag cag gtg gtc atc aac tgt gcc
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Val Gly Arg Lys Met Gln Pro Asp Gln Gln Val Val Ile Asn Cys Ala
                                         315
                    310
atc gtc cgg ggt gtc aag tat aac cag gcc acc ccc aac ttc cat cag
                                                                      1008
Ile Val Arg Gly Val Lys Tyr Asn Gln Ala Thr Pro Asn Phe His Gln
                                     330
                 325
tgg cgc gac gct cgc cag gtc tgg ggc ctc aac ttc ggc agc aag gag
                                                                      1056
 Trp Arg Asp Ala Arg Gln Val Trp Gly Leu Asn Phe Gly Ser Lys Glu
                                 345
             340
 gat gcg gcc cag ttt gcc gcc ggc atg gcc agt gcc cta gag gcg ttg
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 Asp Ala Ala Gln Phe Ala Ala Gly Met Ala Ser Ala Leu Glu Ala Leu
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                             360
 gaa gga ggt ggg ccc cct cca ccc cca gca ctt ccc acc tgg tcg gtc
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 Glu Gly Gly Pro Pro Pro Pro Pro Ala Leu Pro Thr Trp Ser Val
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                                             380
 ccg aac ggc ccc tcc ccg gag gag gtg gag cag cag aaa agg cag cag
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 Pro Asn Gly Pro Ser Pro Glu Glu Val Glu Gln Gln Lys Arg Gln Gln
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 ccc ggc ccg tcg gag cac ata gag cgc cgg gtc tcc aat gca gga ggc
                                                                      1248
 Pro Gly Pro Ser Glu His Ile Glu Arg Arg Val Ser Asn Ala Gly Gly
                                     410
 cca cct gct ccc ccc gct ggg ggt cca ccc cca cca cca gga cct ccc
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 Pro Pro Ala Pro Pro Ala Gly Gly Pro Pro Pro Pro Gly Pro Pro
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                                  425
```

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cet ect cea ggt ece ece eca ece eca ggt ttg ece eet teg ggg gte
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Pro Pro Pro Gly Pro Pro Pro Pro Gly Leu Pro Pro Ser Gly Val
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                                                                    1392
cca gct gca gcg cac gga gca ggg gga gga cca ccc cct gca ccc cct
Pro Ala Ala His Gly Ala Gly Gly Pro Pro Pro Ala Pro Pro
                        455
ctc ccg gca gca cag ggc cct ggt ggt ggg gga gct ggg gcc cca ggc
                                                                    1440
Leu Pro Ala Ala Gln Gly Pro Gly Gly Gly Gly Ala Gly Ala Pro Gly
                                        475
                    470
                                                                    1488
ctg gcc gca gct att gct gga gcc aaa ctc agg aaa gtc agc aag cag
Leu Ala Ala Ile Ala Gly Ala Lys Leu Arg Lys Val Ser Lys Gln
                                    490
                                                        495
                485
gag gag gcc tca ggg ggg ccc aca gcc ccc aaa gct gag agt ggt cga
                                                                    1536
Glu Glu Ala Ser Gly Gly Pro Thr Ala Pro Lys Ala Glu Ser Gly Arg
                                505
age gga ggt ggg gga ete atg gaa gag atg aae gee atg etg gee egg
                                                                    1584
Ser Gly Gly Gly Leu Met Glu Glu Met Asn Ala Met Leu Ala Arg
                                                525
                            520
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aga agg aaa gcc acg caa gtt ggg gag aaa acc ccc aag gat gaa tct
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Arg Arg Lys Ala Thr Gln Val Gly Glu Lys Thr Pro Lys Asp Glu Ser
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gcc aat cag gag gag cca gag gcc aga gtc ccg gcc cag agt gaa tct
                                                                    1680
Ala Asn Gln Glu Glu Pro Glu Ala Arg Val Pro Ala Gln Ser Glu Ser
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                    550
                                                                    1728
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Val Arg Arg Pro Trp Glu Lys Asn Ser Thr Thr Leu Pro Arg Met Lys
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                565
tcg tct tct tcg gtg acc act tcc gag acc caa ccc tgc acg ccc agc
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Ser Ser Ser Ser Val Thr Thr Ser Glu Thr Gln Pro Cys Thr Pro Ser
                                585
tcc agt gat tac tcg gac cta cag agg gtg aaa cag gag ctt ctg gaa
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Ser Ser Asp Tyr Ser Asp Leu Gln Arg Val Lys Gln Glu Leu Leu Glu
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gag gtg aag aag gaa ttg cag aaa gtg aaa gag gaa atc att gaa gcc
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Glu Val Lys Lys Glu Leu Gln Lys Val Lys Glu Glu Ile Ile Glu Ala
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 Gly
 His
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 Ser
 Val
 Ser
 Gly

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 Gly
 Gly
 Asp
 Ala
 Thr
 Tyr
 Gly
 Lys
 Leu
 Thr
 Leu
 Lys
 Phe
 Ile

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 45
 45

 Cys
 Thr
 Thr
 Gly
 Lys
 Leu
 Pro
 Val
 Pro
 Thr
 Leu
 Val
 Thr
 Thr

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Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
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Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
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Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
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Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
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                  150
Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                                 170
              165
Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
                                             190
                              185
          180
Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
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Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
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Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
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Gly Leu Arg Ser Arg Ala Gln Ala Ser Met Ser Glu Thr Val Ile Met
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Ser Glu Thr Val Ile Cys Ser Ser Arg Ala Thr Val Met Leu Tyr Asp
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Asp Gly Asn Lys Arg Trp Leu Pro Ala Gly Thr Gly Pro Gln Ala Phe
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Ser Arg Val Gln Ile Tyr His Asn Pro Thr Ala Asn Ser Phe Arg Val
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Val Gly Arg Lys Met Gln Pro Asp Gln Gln Val Val Ile Asn Cys Ala
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Ile Val Arg Gly Val Lys Tyr Asn Gln Ala Thr Pro Asn Phe His Gln
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Trp Arg Asp Ala Arg Gln Val Trp Gly Leu Asn Phe Gly Ser Lys Glu
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Glu Gly Gly Pro Pro Pro Pro Pro Ala Leu Pro Thr Trp Ser Val
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Pro Asn Gly Pro Ser Pro Glu Glu Val Glu Gln Gln Lys Arg Gln Gln
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                                      395
Pro Gly Pro Ser Glu His Ile Glu Arg Arg Val Ser Asn Ala Gly Gly
                                  410
               405
Pro Pro Ala Pro Pro Ala Gly Gly Pro Pro Pro Pro Gly Pro Pro
                              425
                                                430
            420
 Pro Pro Pro Gly Pro Pro Pro Pro Gly Leu Pro Pro Ser Gly Val
                                            445
                           440
       435
 Pro Ala Ala His Gly Ala Gly Gly Gly Pro Pro Pro Ala Pro Pro
                                         460
                       455
 Leu Pro Ala Ala Gln Gly Pro Gly Gly Gly Gly Ala Gly Ala Pro Gly
                                      475
                   470
 Leu Ala Ala Ala Ile Ala Gly Ala Lys Leu Arg Lys Val Ser Lys Gln
                                  490
               485
 Glu Glu Ala Ser Gly Gly Pro Thr Ala Pro Lys Ala Glu Ser Gly Arg
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 Ser Gly Gly Gly Leu Met Glu Glu Met Asn Ala Met Leu Ala Arg
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 Arg Arg Lys Ala Thr Gln Val Gly Glu Lys Thr Pro Lys Asp Glu Ser
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                                          540
 Ala Asn Gln Glu Glu Pro Glu Ala Arg Val Pro Ala Gln Ser Glu Ser
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Val Arg Arg Pro Trp Glu Lys Asn Ser Thr Thr Leu Pro Arg Met Lys
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                       570
Ser Ser Ser Ser Val Thr Thr Ser Glu Thr Gln Pro Cys Thr Pro Ser
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            580
Ser Ser Asp Tyr Ser Asp Leu Gln Arg Val Lys Gln Glu Leu Leu Glu
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                                    10
gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc
                                                                       96
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
                                2.5
                                                                      144
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
                            40
        35
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc
                                                                      192
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
                                            60
                                                                      240
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
                                         75
                    70
cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag
                                                                      288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                85
                                    90
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag
                                                                      336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
                                105
                                                    110
            100
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc
                                                                      384
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
                            120
        115
atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac
                                                                      432
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
                                            140
                        135
```

aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aac

| 145 | | | | | Asn 150 | | | | | 155 | | | | | 160 | |
|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|------|
| ggc Gly | atc Ile | aag Lys | gtg Val | aac Asn 165 | ttc Phe | aag Lys | atc Ile | cgc Arg | cac His 170 | aac Asn | atc Ile | gag Glu | gac Asp | ggc Gly 175 | agc Ser | 528 |
| gtg Val | cag Gln | ctc Leu | gcc Ala 180 | gac Asp | cac His | tac Tyr | cag Gln | cag Gln 185 | aac Asn | acc Thr | ccc Pro | atc Ile | ggc Gly 190 | gac Asp | ggc Gly | 576 |
| ccc Pro | gtg Val | ctg Leu 195 | ctg Leu | ccc Pro | gac Asp | aac Asn | cac His 200 | tac Tyr | ctg Leu | agc Ser | acc Thr | cag Gln 205 | tcc Ser | gcc Ala | ctg Leu | 624 |
| agc Ser | aaa Lys 210 | qac | ccc Pro | aac Asn | gag Glu | aag Lys 215 | cgc Arg | gat Asp | cac His | atg Met | gtc Val 220 | ctg Leu | ctg Leu | gag Glu | ttc Phe | 672 |
| gtg Val 225 | acc | gcc Ala | gcc Ala | ggg Gly | atc Ile 230 | act | ctc Leu | ggc Gly | atg Met | gac Asp 235 | gag Glu | ctg Leu | tac Tyr | aag Lys | tcc Ser 240 | 720 |
| gga | ctc Leu | aga Arg | tct Ser | cga Arg 245 | gct Ala | caa Gln | gct Ala | tca Ser | atg Met 250 | gct Ala | gcc Ala | atc Ile | cgg Arg | aag Lys 255 | aaa Lys | 768 |
| ctg Leu | gtg Val | att Ile | gtt Val 260 | ggt | gat Asp | gga Gly | gcc Ala | tgt Cys 265 | gga | aag Lys | aca Thr | tgc Cys | ttg Leu 270 | ctc Leu | ata Ile | 816 |
| gtc Val | ttc Phe | agc Ser 275 | aaq | gac Asp | cag Gln | ttc Phe | cca Pro 280 | gag | gtg Val | tat Tyr | gtg Val | ccc Pro 285 | aca Thr | gtg Val | ttt Phe | 864 |
| gag Glu | aac Asn 290 | tat | gtg Val | gca Ala | gat Asp | atc Ile 295 | gag | gtg Val | gat Asp | gga Gly | aag Lys 300 | cag Gln | gta Val | gag Glu | ttg Leu | 912 |
| gct Ala 305 | t.t.a | tgg Trp | gac Asp | aca Thr | gct Ala 310 | aaa | cag Gln | gaa Glu | gat Asp | tat Tyr 315 | gat Asp | cgc Arg | ctg Leu | agg Arg | ccc Pro 320 | 960 |
| ctc | tcc Ser | tac Tyr | cca Pro | gat Asp 325 | acc Thr | gat Asp | gtt Val | ata Ile | ctg Leu 330 | atg Met | tgt Cys | ttt Phe | tcc Ser | atc Ile 335 | gac Asp | 1008 |
| agc Ser | cct Pro | gat Asp | agt Ser 340 | tta | gaa Glu | aac Asn | atc Ile | cca Pro 345 | gaa | aag Lys | tgg Trp | acc Thr | cca Pro 350 | gaa Glu | gtc Val | 1056 |
| aag Lys | cat His | ttc Phe 355 | tqt | ccc Pro | aac Asn | gtg Val | ccc Pro 360 | atc | atc Ile | ctg Leu | gtt Val | ggg Gly 365 | aat Asn | aag Lys | aag Lys | 1104 |
| gat Asp | ctt Leu 370 | caa | aat Asn | gat Asp | gag Glu | cac His 375 | aca Thr | agg Arg | cgg Arg | gag Glu | cta Leu 380 | Ala | aag Lys | atg Met | aag Lys | 1152 |
| cag Gln 385 | gag Glu | ccg Pro | gtg Val | aaa Lys | cct Pro 390 | gaa Glu | gaa Glu | ggc Gly | aga Arg | gat Asp 395 | Met | gca Ala | aac Asn | agg Arg | att Ile 400 | 1200 |
| ggc Gly | gct Ala | Phe | Gly | Tyr 405 | Met | Glu | Cys | Ser | Ala 410 | Lys | Thr | Lys | Asp | Gly 415 | | 1248 |
| aga Arg | gag Glu | gtt Val | ttt Phe 420 | gaa Glu | atg | gct Ala | acg Thr | aga Arg 425 | Ala | gct Ala | ctg Leu | caa Gln | gct Ala 430 | Arg | cgt Arg | 1296 |
| ggg Gly | aag Lys | aaa Lys 435 | Lys | tct Ser | ggt Gly | tgc Cys | ctt Leu 440 | Val | ttg Leu | tga | | | | | | 1329 |

<211> 442

<213> Artificial Sequence

<220>

<223> EGFP-RhoA fusion

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Gly Lys Lys Ser Gly Cys Leu Val Leu
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Met Asp His Tyr Asp Ser Gln Gln Thr Asn Asp Tyr Met Gln Pro Glu
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                5
gag gac tgg gac cgg gac ctg ctc ctg gac ccg gcc tgg gag aag cag
                                                                      96
Glu Asp Trp Asp Arg Asp Leu Leu Leu Asp Pro Ala Trp Glu Lys Gln
                                25
            20
cag aga aag aca ttc acg gca tgg tgt aac tcc cac ctc cgg aag gcg
                                                                      144
Gln Arg Lys Thr Phe Thr Ala Trp Cys Asn Ser His Leu Arg Lys Ala
                            40
        35
ggg aca cag atc gag aac atc gaa gag gac ttc cgg gat ggc ctg aag
                                                                      192
Gly Thr Gln Ile Glu Asn Ile Glu Glu Asp Phe Arg Asp Gly Leu Lys
                        55
ctc atg ctg ctg gag gtc atc tca ggt gaa cgc ttg gcc aag cca
                                                                      240
Leu Met Leu Leu Glu Val Ile Ser Gly Glu Arg Leu Ala Lys Pro
                                         75
gag cga ggc aag atg aga gtg cac aag atc tcc aac gtc aac aag gcc
                                                                      288
Glu Arg Gly Lys Met Arg Val His Lys Ile Ser Asn Val Asn Lys Ala
                85
 ctg gat ttc ata gcc agc aaa ggc gtc aaa ctg gtg tcc atc gga gcc
                                                                      336
Leu Asp Phe Ile Ala Ser Lys Gly Val Lys Leu Val Ser Ile Gly Ala
                                                     110
                                 105
                                                                      384
 gaa gaa atc gtg gat ggg aat gtg aag atg acc ctg ggc atg atc tgg
 Glu Glu Ile Val Asp Gly Asn Val Lys Met Thr Leu Gly Met Ile Trp
                             120
                                                125
 acc atc atc ctg cgc agg gat cca ccg gtc gcc acc atg gtg agc aag
                                                                      432
 Thr Ile Ile Leu Arg Arg Asp Pro Pro Val Ala Thr Met Val Ser Lys
                                             140
                         135
 ggc gag gag ctg ttc acc ggg gtg gtg ccc atc ctg gtc gag ctg gac
                                                                      480
 Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu Leu Asp
                                         155
                    150
 ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc gag ggc gag ggc
                                                                      528
 Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly Gly
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gat gcc acc tac ggc aag ctg acc ctg aag ttc atc tgc acc acc ggc

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Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly
                    185
          180
                                                                     624
aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc ctg acc tac ggc
Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu Thr Tyr Gly
                           200
                                                                     672
gtg cag tgc ttc agc cgc tac ccc gac cac atg aag cag cac gac ttc
Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln His Asp Phe
                                           220
                        215
ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag cgc acc atc ttc
                                                                     720
Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg Thr Ile Phe
                                        235
                   230
                                                                     768
ttc aag gac gac ggc aac tac aag acc cgc gcc gag gtg aag ttc gag
Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu
                                    250
               245
ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc atc gac ttc aag
                                                                     816
Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile Asp Phe Lys
                                265
                                                   270
gag gac ggc aac atc ctg ggg cac aag ctg gag tac aac tac aac agc
                                                                     864
Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn Tyr Asn Ser
                           280
       275
cac aac gtc tat atc atg gcc gac aag cag aag aac ggc atc aag gtg
                                                                     912
His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly Ile Lys Val
                                            300
                       295
aac ttc aag atc cgc cac aac atc gag gac ggc agc gtg cag ctc gcc
                                                                     960
Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val Gln Leu Ala
                    310
                                        315
                                                                    1008
gac cac tac cag cag aac acc ccc atc ggc gac ggc ccc gtg ctg
Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro Val Leu Leu
                                    330
                325
ccc gac aac cac tac ctg agc acc cag tcc gcc ctg agc aaa gac ccc
                                                                    1056
Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser Lys Asp Pro
                                                 350
                               345
aac gag aag cgc gat cac atg gtc ctg ctg gag ttc gtg acc gcc
                                                                    1104
Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val Thr Ala Ala
                                                365
                            360
        355
                                                                    1140
ggg atc act ctc ggc atg gac gag ctg tac aag taa
Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys
                        375
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 Glu Asp Trp Asp Arg Asp Leu Leu Leu Asp Pro Ala Trp Glu Lys Gln
                                25
 Gln Arg Lys Thr Phe Thr Ala Trp Cys Asn Ser His Leu Arg Lys Ala
                             40
         35
 Gly Thr Gln Ile Glu Asn Ile Glu Glu Asp Phe Arg Asp Gly Leu Lys
                         55
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Leu Met Leu Leu Glu Val Ile Ser Gly Glu Arg Leu Ala Lys Pro
                      75
       70
Glu Arg Gly Lys Met Arg Val His Lys Ile Ser Asn Val Asn Lys Ala
                               90
             85
Leu Asp Phe Ile Ala Ser Lys Gly Val Lys Leu Val Ser Ile Gly Ala
                           105
          100
Glu Glu Ile Val Asp Gly Asn Val Lys Met Thr Leu Gly Met Ile Trp
                       120
                                         125
Thr Ile Ile Leu Arg Arg Asp Pro Pro Val Ala Thr Met Val Ser Lys
                   135
                                     140
Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu Leu Asp
                                  155
         150
Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly Glu Gly
             165
                               170
                                                 175
Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr Thr Gly
                           185
          180
Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu Thr Tyr Gly
              200
      195
Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln His Asp Phe
       215
                           220
Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg Thr Ile Phe
      230 235
Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val Lys Phe Glu
                               250
             245
Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile Asp Phe Lys
                           265
                                             270
          260
Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn Tyr Asn Ser
                        280
       275
His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly Ile Lys Val
                                      300
                    295
Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val Gln Leu Ala
                310
                                  315
Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro Val Leu Leu
                               330
              325
Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser Lys Asp Pro
                345 350
         340
Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val Thr Ala Ala
               360
Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys
                    375
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<211> 3516

<212> DNA

<213> Artificial Sequence

<220>

<223> EGFP-NFAT fusion

<220>

<221> CDS

<222> (1)..(3513)

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| | | agc Ser | | | | | | | | | | | | | | 48 |
| gtc | | ctg Leu | - | - | - | | | | cac | _ | | - | | tcc | | 96 |
| | | gag Glu 35 | ggc | | | | | ggc | | | | | aag | | | 144 |
| | | acc Thr | | _ | - | | gtg | | | | | ctc | | | | 192 |
| _ | | tac Tyr | | | - | _ | | _ | _ | | | _ | | - | _ | 240 |
| | | gac Asp | | | | | | | | | | | | | | 288 |
| | | atc Ile | | | | | | | | | | | | | | 336 |
| | | ttc Phe 115 | | | | | | | | _ | | | _ | _ | | 384 |
| | | ttc Phe | | | | | | | | | | | | | | 432 |
| | | aac Asn | | | | | | | | | | | | | | 480 |
| | | aag Lys | | | | - | | _ | | | | | _ | | agc | 528 |
| | | ctc Leu | | | | | - | _ | | | | | | _ | | 576 |
| | | ctg Leu 195 | | | | | | | | | | | | | | 624 |
| | | gac Asp | | | | _ | _ | _ | | _ | _ | _ | _ | | | 672 |
| | | gcc Ala | | | | | | | | | | | | | | 720 |
| | | aga Arg | | | | | | | | | | | | | | 768 |
| | | ggg ggg | | | | | | | | | | | | | | 816 |
| | | gac Asp 275 | | | | | | - | | | | - | | _ | | 864 |
| | | gag Glu | | | | | | | | | | | | | | 912 |
| - | tac Tyr | ccc Pro | - | - | | | | | | | _ | | | _ | | 960 |

| ctt Leu | gct Ala | agt Ser | ctc Leu | tct Ser 325 | ggc Gly | gag Glu | ccc Pro | ccc Pro | ggc Gly 330 | cga Arg | ttc Phe | gga Gly | gag Glu | ccg Pro 335 | gat Asp | 1008 |
|------------|------------|------------|------------|-------------------|------------|------------|------------|------------|-------------------|------------|------------|------------|------------|-------------------|------------|-------|
| | | | | | aag Lys | | | | | | | | | | | 1056 |
| | | Leu | agc | | cgg Arg | | Glu | atc | | | | His | gaa | | | 1104 |
| _ | Āla | | | | ctc Leu | Arg | _ | _ | - | | Gly | | _ | | | 1152 |
| Gln | | | | | ggg | | | | | Pro | | | | | Pro | 1200 |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 | |
| | | | | | ggc Gly | | | | | | | | | | | 1248 |
| 300 | 300 | ~~~ | too | | qcc | 300 | ++0 | a++ | | a a c | 3.00 | ++0 | + ~ ~ | | tac | 1296 |
| _ | _ | | | | Ala | - | | | | _ | | | | | | 1290 |
| | _ | | - | _ | tcg Ser | | | | | | | - | - | - | - | 1344 |
| cca | car | | caa | 220 | atc | cct | | cat | tat | tcc | ccc | | acc | tca | cca | 1392 |
| _ | _ | | | | Ile | | _ | | | | | _ | | _ | | 1372 |
| ata | atg | tca | cct | cga | acc | agc | ctc | gcc | gag | gac | agc | tgc | ctg | ggc | cgc | 1440 |
| 465 | | | | | Thr 470 | | | | | 475 | | | | | 480 | |
| | _ | | | | cgt Arg | _ | _ | | _ | | | - | | | - | 1488 |
| aan | caa | agg | cat | | tgc | acc | gag | acc | | att | acc | cta | cca | | gga | 1536 |
| | | | | | Cys | | | | | | | | | | | |
| gcc | tca | CCC | cag | cgc | tcc | cgg | agc | CCC | tcg | ccg | cag | CCC | tca | tct | cac | 1584 |
| | | 515 | | _ | Ser | | 520 | | | | | 525 | | | | 1.620 |
| | | | | | cac His | | | | | | | | | | | 1632 |
| aac | | acc | ata | atc | atg | gat | acc | ctq | aac | agc | ctc | acc | acq | qac | tcq | 1680 |
| | | | | | Met 550 | | | | | | | | | | | |
| | _ | | | | CCC | - | _ | | _ | | _ | | _ | | _ | 1728 |
| | - | - | | 565 | Pro | _ | | _ | 570 | | | | | 575 | | 1776 |
| - | | | - | - | cca Pro | | _ | - | | _ | | - | | | | 1776 |
| ccq | gcc | qtq | gag | ttc | ctg | ggg | ccc | tgc | gag | cag | ggc | gag | agg | aga | aac | 1824 |
| _ | - | | | | Leu | | | _ | | _ | | | | - | | |
| | | | | | atc Ile | | | | | | | | | | | 1872 |
| cta | | act | acc | att | ccc | | tac | adc | atc | cca | | act | gca | ticc | ctc | 1920 |
| | Val | | | | Pro 630 | | | | | | | | | | | |
| cct | cca | ctt | gaq | tgg | ccg | ctg | tcc | agt | cag | tca | ggc | tct | tac | gag | ctg | 1968 |
| | | | | | Pro | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | + ~ + | ~~~ | 202 | 2016 |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------------|------------|------------|------|
| | | | | | | | | | | | | | tat Tyr 670 | | | 2016 |
| | | | | | | | | | | | | | cac His | | | 2064 |
| | | | | | | | | | | | | | ctt Leu | | | 2112 |
| Phe 705 | Ile | ĞÎÿ | Thr | Ála | Asp 710 | Ğlü | Arg | Ile | Leu | Lys 715 | Pro | His | gcc Ala | Phe | Tyr 720 | 2160 |
| | | | | | | | | | | | | | agc Ser | | | 2208 |
| | | | | | | | | | | | | | gag Glu 750 | | | 2256 |
| | | _ | | - | | | - | _ | | | | | aag Lys | | | 2304 |
| | _ | - | | | _ | | | | | _ | _ | | gga Gly | | | 2352 |
| | _ | | | - | _ | - | | _ | - | | | | gag Glu | | _ | 2400 |
| | _ | | _ | | | - | | _ | | | | | gag Glu | | | 2448 |
| | | | | | | | | | | | | | gac Asp 830 | | | 2496 |
| | | | | | | | | | | | | | ggg Gly | | | 2544 |
| Phe | Thr 850 | Ser | Glu | Ser | Lys | Val 855 | Val | Phe | Thr | Glu | Lys 860 | Thr | aca Thr | Asp | Gly | 2592 |
| Gln 865 | Gln | Ile | Trp | Glu | Met 870 | Glu | Ala | Thr | Val | Asp 875 | Lys | Asp | aag Lys | Ser | Gln 880 | 2640 |
| Pro | Asn | Met | Leu | Phe 885 | Val | Glu | Ile | Pro | Glu 890 | Tyr | Arg | Asn | | His 895 | Ile | 2688 |
| Arg | Thr | Pro | Val 900 | Lys | Val | Asn | Phe | Tyr 905 | Val | Ile | Asn | Gly | aag Lys 910 | Arg | Lys | 2736 |
| Arg | Ser | Gln 915 | Pro | Gln | His | Phe | Thr 920 | Tyr | His | Pro | Val | Pro 925 | gcc Ala | Ile | Lys | 2784 |
| Thr | Glu 930 | Pro | Thr | Asp | Glu | Tyr 935 | Asp | Pro | Thr | Leu | Ile 940 | Cys | agc Ser | Pro | Thr | 2832 |
| His 945 | Gly | Gly | Leu | Gly | Ser 950 | Gln | Pro | Tyr | Tyr | Pro 955 | Gln | His | ccg Pro | Met | Val 960 | 2880 |
| Āla | Glu | Ser | Pro | Ser 965 | Суѕ | Leu | Val | Ala | Thr 970 | Met | Ala | Pro | tgc Cys | Gln 975 | Gln | 2928 |
| | | | | | | | | | | | | | caa Gln 990 | | | 2976 |

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cca gcg gcc gta ctc tac cag cgg agc aag agc ctg agc ccc agc ctg
                                                                                          3024
Pro Ala Ala Val Leu Tyr Gln Arg Ser Lys Ser Leu Ser Pro Ser Leu
                                                               1005
                                   1000
ctg ggc tat cag cag ccg gcc ctc atg gcc gcc ccg ctg tcc ctt
Leu Gly Tyr Gln Gln Pro Ala Leu Met Ala Ala Pro Leu Ser Leu
                                                                                          3069
                                1015
                                                             1020
    1010
gcg gac gct cac cgc tct gtg ctg gtg cac gcc ggc tcc cag ggc
Ala Asp Ala His Arg Ser Val Leu Val His Ala Gly Ser Gln Gly
                                                                                          3114
                                                             1035
                                 1030
cag age tea gee etg etc eac ecc tet eeg ace aac eag eag gee
Gln Ser Ser Ala Leu Leu His Pro Ser Pro Thr Asn Gln Gln Ala
                                                                                          3159
                                                            1050
     1040
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                                                                                           3204
tcg cct gtg atc cac tac tca ccc acc aac cag cag ctg cgc tgc
Ser Pro Val Ile His Tyr Ser Pro Thr Asn Gln Gln Leu Arg Cys
                                1060
                                                            1065
gga agc cac cag gag ttc cag cac atc atg tac tgc gag aat ttc Gly Ser His Gln Glu Phe Gln His Ile Met Tyr Cys Glu Asn Phe
                                                                                           3249
    1070
                                1075
                                                             1080
gca cca ggc acc acc aga cct ggc ccg ccc ccg gtc agt caa ggt
Ala Pro Gly Thr Thr Arg Pro Gly Pro Pro Pro Val Ser Gln Gly
                                                                                           3294
                           1090
                                                        1095
     1085
cag agg ctg agc ccg ggt tcc tac ccc aca gtc att cag cag cag
                                                                                           3339
Gln Arg Leu Ser Pro Gly Ser Tyr Pro Thr Val Ile Gln Gln
                                                             1110
                               1105
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aat gcc acg agc caa aga gcc gcc aaa aac gga ccc ccg gtc agt
Asn Ala Thr Ser Gln Arg Ala Ala Lys Asn Gly Pro Pro Val Ser
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gac caa aag gaa gta tta cct gcg ggg gtg acc att aaa cag gag
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                                                             1140
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cag aac ttg gac cag acc tac ttg gat gat gtt aat gaa att atc
Gln Asn Leu Asp Gln Thr Tyr Leu Asp Asp Val Asn Glu Ile Ile
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                                 1150
agg aag gag ttt tca gga cct cct gcc aga aat cag acg taa
Arg Lys Glu Phe Ser Gly Pro Pro Ala Arg Asn Gln Thr
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Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
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Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
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Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
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Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
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Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
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Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
                                                190
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Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
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Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
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Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
                           235
                  230
Gly Leu Arg Ser Arg Ala Met Asn Ala Pro Glu Arg Gln Pro Gln Pro
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               245
Asp Gly Gly Asp Ala Pro Gly His Glu Pro Gly Gly Ser Pro Gln Asp
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           260
Glu Leu Asp Phe Ser Ile Leu Phe Asp Tyr Glu Tyr Leu Asn Pro Asn
                                             285
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Glu Glu Glu Pro Asn Ala His Lys Val Ala Ser Pro Pro Ser Gly Pro
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                                         300
Ala Tyr Pro Asp Asp Val Met Asp Tyr Gly Leu Lys Pro Tyr Ser Pro
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Leu Ala Ser Leu Ser Gly Glu Pro Pro Gly Arg Phe Gly Glu Pro Asp
                                  330
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Arg Val Gly Pro Gln Lys Phe Leu Ser Ala Ala Lys Pro Ala Gly Ala
                              345
 Ser Gly Leu Ser Pro Arg Ile Glu Ile Thr Pro Ser His Glu Leu Ile
                                             365
                        360
 Gln Ala Val Gly Pro Leu Arg Met Arg Asp Ala Gly Leu Leu Val Glu
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 Gln Pro Pro Leu Ala Gly Val Ala Ala Ser Pro Arg Phe Thr Leu Pro
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 Val Pro Gly Phe Glu Gly Tyr Arg Glu Pro Leu Cys Leu Ser Pro Ala
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 Ser Ser Gly Ser Ser Ala Ser Phe Ile Ser Asp Thr Phe Ser Pro Tyr
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 Thr Ser Pro Cys Val Ser Pro Asn Asn Gly Gly Pro Asp Asp Leu Cys
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 Pro Gln Phe Gln Asn Ile Pro Ala His Tyr Ser Pro Arg Thr Ser Pro
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 Ile Met Ser Pro Arg Thr Ser Leu Ala Glu Asp Ser Cys Leu Gly Arg
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 His Ser Pro Val Pro Arg Pro Ala Ser Arg Ser Ser Pro Gly Ala
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 Lys Arg Arg His Ser Cys Ala Glu Ala Leu Val Ala Leu Pro Pro Gly
                               505
 Ala Ser Pro Gln Arg Ser Arg Ser Pro Ser Pro Gln Pro Ser Ser His
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 Val Ala Pro Gln Asp His Gly Ser Pro Ala Gly Tyr Pro Pro Val Ala
                                        540
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 Gly Ser Ala Val Ile Met Asp Ala Leu Asn Ser Leu Ala Thr Asp Ser
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 Pro Cys Gly Ile Pro Pro Lys Met Trp Lys Thr Ser Pro Asp Pro Ser
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 Pro Val Ser Ala Ala Pro Ser Lys Ala Gly Leu Pro Arg His Ile Tyr
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Pro Ala Val Glu Phe Leu Gly Pro Cys Glu Gln Gly Glu Arg Arg Asn
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Ser Ala Pro Glu Ser Ile Leu Leu Val Pro Pro Thr Trp Pro Lys Pro
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Leu Val Pro Ala Ile Pro Ile Cys Ser Ile Pro Val Thr Ala Ser Leu
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       630
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              645
Arg Ile Glu Val Gln Pro Lys Pro His His Arg Ala His Tyr Glu Thr
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Glu Gly Ser Arg Gly Ala Val Lys Ala Pro Thr Gly Gly His Pro Val
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Phe Ile Gly Thr Ala Asp Glu Arg Ile Leu Lys Pro His Ala Phe Tyr
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Gln Val His Arg Ile Thr Gly Lys Thr Val Thr Thr Thr Ser Tyr Glu
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Ser Cys Leu Val Tyr Gly Gly Gln Gln Met Ile Leu Thr Gly Gln Asn
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Phe Thr Ser Glu Ser Lys Val Val Phe Thr Glu Lys Thr Thr Asp Gly
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Gln Gln Ile Trp Glu Met Glu Ala Thr Val Asp Lys Asp Lys Ser Gln
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Pro Asn Met Leu Phe Val Glu Ile Pro Glu Tyr Arg Asn Lys His Ile
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Arg Thr Pro Val Lys Val Asn Phe Tyr Val Ile Asn Gly Lys Arg Lys
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Arg Ser Gln Pro Gln His Phe Thr Tyr His Pro Val Pro Ala Ile Lys
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Thr Glu Pro Thr Asp Glu Tyr Asp Pro Thr Leu Ile Cys Ser Pro Thr
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His Gly Gly Leu Gly Ser Gln Pro Tyr Tyr Pro Gln His Pro Met Val
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Ala Glu Ser Pro Ser Cys Leu Val Ala Thr Met Ala Pro Cys Gln Gln
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Phe Arg Thr Gly Leu Ser Ser Pro Asp Ala Arg Tyr Gln Gln Asn
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Gly His Glu Pro Gly Gly Ser Pro Gln Asp Glu Leu Asp Phe Ser Ile
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ctc ttc gac tat gag tat ttg aat ccg aac gaa gaa gag ccg aat gca
Leu Phe Asp Tyr Glu Tyr Leu Asn Pro Asn Glu Glu Glu Pro Asn Ala
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cat aag gtc gcc agc cca ccc tcc gga ccc gca tac ccc gat gat gta
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His Lys Val Ala Ser Pro Pro Ser Gly Pro Ala Tyr Pro Asp Asp Val
                                           60
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atg gac tat ggc ctc aag cca tac agc ccc ctt gct agt ctc tct ggc
Met Asp Tyr Gly Leu Lys Pro Tyr Ser Pro Leu Ala Ser Leu Ser Gly
                                       75
                   70
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 gag ccc ccc ggc cga ttc gga gag ccg gat agg gta ggg ccg cag aag
Glu Pro Pro Gly Arg Phe Gly Glu Pro Asp Arg Val Gly Pro Gln Lys
                85
                                   90
 ttt ctg agc gcg gcc aag cca gca ggg gcc tcg ggc ctg agc cct cgg
                                                                   336
 Phe Leu Ser Ala Ala Lys Pro Ala Gly Ala Ser Gly Leu Ser Pro Arg
                               105
           100
                                                                   384
 atc gag atc act ccg tcc cac gaa ctg atc cag gca gtg ggg ccc ctc
 Ile Glu Ile Thr Pro Ser His Glu Leu Ile Gln Ala Val Gly Pro Leu
                           120
 cgc atg aga gac gcg ggc ctc ctg gtg gag cag cct ccc ctg gcc ggg
                                                                   432
 Arg Met Arg Asp Ala Gly Leu Leu Val Glu Gln Pro Pro Leu Ala Gly
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| αtα | | | | | | | | | | | | | | | | |
|--|---|---|--|---|---|---|--|---|--|---|---|---|--|--|---|--|
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| Tyr | Arg | Glu | Pro | Leu | Cys | Leu | Ser | Pro | Āla | Ser | Ser | Ğly | Ser | Ser | Ala | |
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| | | | Ser | | | | | | | | | | | | | |
| 501 | | | 180 | | | | | 185 | - 2 - | | | | 190 | | | |
| CCC | 2 2 t | 220 | ggc | aaa | CCC | aac | aac | | tat | cca | cad | ttt | caa | aac | atc | 624 |
| Dro | Aen | Aen | Gly | G1 v | Pro | Asn | Asn | Len | CVS | Pro | Gln | Phe | Gln | Asn | Tle | |
| FIO | ASII | 195 | GLY | GLY | 110 | 2105 | 200 | пси | Cyb | 110 | 0 | 205 | 0.211 | | | |
| aat | aat | | tat | + a a | 000 | 202 | | tca | CCa | a t a | ato | | cct | cga | acc | 672 |
| Dwo | 712 | Uic | Tyr | 202 | Dro | Ara | Thr | Sor | Dro | Tla | Mot | Ser | Pro | Ara | Thr | 0,2 |
| FIO | | птэ | тУr | Ser | 110 | 215 | TIIL | DCI | 110 | 110 | 220 | 501 | 110 | 9 | | |
| | 210 | | | ~~~ | | | a+ a | ~~~ | 000 | 000 | | 000 | ata | ccc | cat | 720 |
| agc | CEC | gcc | gag | gac | age | Crra | Ton | gge | 7 ma | uic | cor | Dro | y cy | Dro | Ara | 720 |
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| Pro | Ala | Ser | Arg | | Ser | Ser | Pro | GLY | | глs | Arg | Arg | HIS | | Cys | |
| | | | | 245 | | | | | 250 | | | | | 255 | | |
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| Ala | Glu | Ala | Leu | Val | Ala | Leu | Pro | Pro | Gly | Ala | Ser | Pro | Gln | Arg | Ser | |
| | | | 260 | | | | | 265 | | | | | 270 | | | |
| | | | tcg | | | | | | | | | | | | | 864 |
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| Glv | Ser | Pro | Āla | Gly | Tyr | Pro | Pro | Val | Ala | Gly | Ser | Ala | Val | Ile | Met | |
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| Asp | Ala | Leu | Asn | Ser | Leu | Ála | Thr | Āsp | Ser | Pro | Cvs | Glv | Ile | Pro | Pro | |
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| Lug | Mot | Trn | Lys | Thr | Ser | Pro | Asn | Pro | Ser | Pro | Val | Ser | Ala | Ala | Pro | |
| цуз | Mec | пр | пуз | 325 | 501 | 110 | 1101 | 110 | 330 | | | | | 335 | | |
| + 00 | 224 | acc | ggc | | cct | cac | cac | atc | | cca | acc | ata | gag | | cta | 1056 |
| 202 | Tuc | 71a | Glu | Tou | Dro | Ara | Hie | Tla | Tur | Pro | Δla | Val | Glu | | T | |
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| | | | | | | | | | - 1 - | | | | | Phe | Leu | 1030 |
| ~~~ | | +~~ | 340 | | | | | 345 | | | | | 350 | | | |
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| ggg Gly | ccc Pro | Cys | 340 | cag | ggc | gag | agg Arg | 345 aga | aac | tcg | gct | cca Pro | 350 gaa | tcc | atc | |
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| Gly ctg Leu atc | Pro ctg Leu 370 tgc | Cys 355 gtt Val agc | 340 gag Glu ccg Pro | cag Gln ccc Pro | ggc Gly act Thr | gag Glu tgg Trp 375 act | agg Arg 360 ccc Pro | 345 aga Arg aag Lys tcc | aac Asn ccg Pro | tcg Ser ctg Leu | gct Ala gtg Val 380 cca | cca Pro 365 cct Pro | 350 gaa Glu gcc Ala gag | tcc Ser att Ile | atc Ile ccc Pro | 1104 |
| ctg Leu atc | Pro ctg Leu 370 tgc | Cys 355 gtt Val agc | 340 gag Glu ccg Pro | cag Gln ccc Pro | ggc Gly act Thr gtg Val | gag Glu tgg Trp 375 act | agg Arg 360 ccc Pro | 345 aga Arg aag Lys tcc | aac Asn ccg Pro | tcg Ser ctg Leu cct | gct Ala gtg Val 380 cca | cca Pro 365 cct Pro | 350 gaa Glu gcc Ala gag | tcc Ser att Ile | atc Ile ccc Pro | 1104 1152 |
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| ctg Leu atc Ile 385 ctg | Pro ctg Leu 370 tgc Cys | Cys 355 gtt Val agc Ser | 340 gag Glu ccg Pro atc Ile | cag Gln ccc Pro cca Pro | ggc Gly act Thr gtg Val 390 ggc | gag Glu tgg Trp 375 act Thr | agg Arg 360 ccc Pro gca Ala | 345 aga Arg aag Lys tcc Ser | aac Asn ccg Pro ctc Leu | tcg Ser ctg Leu cct Pro 395 cgg | gct Ala gtg Val 380 cca Pro | cca Pro 365 cct Pro ctt Leu | 350 gaa Glu gcc Ala gag Glu | tcc Ser att Ile tgg Trp | atc Ile ccc Pro ccg Pro 400 ccc | 1104 1152 |
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| ctg Leu atc Ile 385 ctg Leu aag Lys | ctg Leu 370 tgc Cys tcc Ser cca Pro | Cys 355 gtt Val agc Ser agt Ser cat His | 340 gag Glu ccg Pro atc Ile cag Gln cac His 420 | cag Gln ccc Pro cca Pro tca ser 405 cgg Arg | ggc Gly act Thr gtg Val 390 ggc Gly gcc Ala | gag Glu tgg Trp 375 act Thr tct Ser cac | agg Arg 360 ccc Pro gca Ala tac Tyr tat Tyr | 345 aga Arg aag Lys tcc Ser gag Glu gag Glu 425 cct | aac Asn ccg Pro ctc Leu ctg Leu 410 aca Thr | tcg Ser ctg Leu cct Pro 395 cgg Arg gaa Glu | gct Ala gtg Val 380 cca Pro atc Ile ggc Gly | cca Pro 365 cct Pro ctt Leu gag Glu agc Ser | 350 gaa Glu gcc Ala gag Glu gtg Val cga Arg 430 cat | tcc Ser att Ile tgg Trp cag Gln 415 ggg Gly | atc Ile ccc Pro ccg Pro 400 ccc Pro gct Ala | 1104 1152 1200 1248 1296 |
| ctg Leu atc Ile 385 ctg Leu aag Lys gtc Val | ctg Leu 370 tgc Cys tcc Ser cca Pro | Cys 355 gtt Val agc ser agt ser cat His gct Ala 435 | 340 gag Glu ccg Pro atc Ile cag Gln cac His 420 cca Pro | cag Gln ccc Pro cca Pro tca Ser 405 cgg Arg | ggc Gly act Thr gtg Val 390 ggc Gly gcc Ala gga Gly | gag Glu tgg Trp 375 act Thr tct Ser cac His | agg Arg 360 ccc Pro gca Ala tac Tyr tat Tyr cac His 440 | 345 aga Arg Lys tcc Ser gag Glu gag Glu 425 cct Pro | aac Asn ccg Pro ctc Leu 410 aca Thr gtg Val | tcg Ser ctg Leu cct Pro 395 cgg Arg gaa Glu gtt | gct Ala gtg Val 380 cca Pro atc Ile ggc Gly cag | cca Pro 365 cct Pro ctt Leu gag Glu agc Ser ctc Leu 445 | 350 gaa Glu gcc Ala gag Glu gtg Val cga Arg 430 cat His | tcc Ser att Ile tgg Trp cag Gln 415 ggg Gly ggc | atc Ile ccc Pro ccg Pro 400 ccc Pro gct Ala tac Tyr | 1104 1152 1200 1248 1296 |
| ctg Leu atc Ile 385 ctg Leu aag Lys gtc Val | ctg Leu 370 tgc Cys tcc Ser cca Pro | Cys 355 gtt Val agc ser agt ser cat His gct Ala 435 | 340 gag Glu ccg Pro atc Ile cag Gln cac His 420 cca Pro | cag Gln ccc Pro cca Pro tca Ser 405 cgg Arg | ggc Gly act Thr gtg Val 390 ggc Gly gcc Ala gga Gly | gag Glu tgg Trp 375 act Thr tct Ser cac His | agg Arg 360 ccc Pro gca Ala tac Tyr tat Tyr cac His 440 | 345 aga Arg Lys tcc Ser gag Glu gag Glu 425 cct Pro | aac Asn ccg Pro ctc Leu 410 aca Thr gtg Val | tcg Ser ctg Leu cct Pro 395 cgg Arg gaa Glu gtt | gct Ala gtg Val 380 cca Pro atc Ile ggc Gly cag | cca Pro 365 cct Pro ctt Leu gag Glu agc Ser ctc Leu 445 | 350 gaa Glu gcc Ala gag Glu gtg Val cga Arg 430 cat His | tcc Ser att Ile tgg Trp cag Gln 415 ggg Gly ggc | atc Ile ccc Pro ccg Pro 400 ccc Pro gct Ala tac Tyr | 1104 1152 1200 1248 1296 |
| ctg Leu atc Ile 385 ctg Leu aag Lys gtc Val | ctg Leu 370 tgc Cys tcc Ser cca Pro aaa Lys | Cys 355 gtt Val agc ser agt ser cat His gct Ala 435 aac | 340 gag Glu ccg Pro atc Ile cag Gln cac His 420 cca Pro aag | cag Gln ccc Pro cca Pro tca Ser 405 cgg Arg act Thr | ggc Gly act Thr gtg Val 390 ggc Gly gcc Ala gga Gly | gag Glu tgg Trp 375 act Thr tct Ser cac His ggc Gly | agg Arg 360 ccc Pro gca Ala tac Tyr tat Tyr cac His 440 ctt | 345 aga Arg aag Lys tcc Ser gag Glu gag Glu 425 cct Pro | aac Asn ccg Pro ctc Leu 410 aca Thr gtg Val | tcg Ser ctg Leu cct Pro 395 cgg Arg gaa Glu gtt Val | gct Ala gtg Val 380 cca Pro atc Ile ggc Gly cag Gln att | cca Pro 365 cct Pro ctt Leu gag Glu agc ctc Leu 445 ggg | 350 gaa Glu gcc Ala gag Glu gtg Val cga Arg 430 cat His | tcc Ser att Ile tgg Trp cag Gln 415 ggg Gly ggc Gly | atc Ile ccc Pro ccg Pro 400 ccc Pro gct Ala tac Tyr gat | 1104 1152 1200 1248 1296 |
| ctg Leu atc Ile 385 ctg Leu aag Lys gtc Val | ctg Leu 370 tgc Cys tcc Ser cca Pro aaa Lys gaa Glu | Cys 355 gtt Val agc ser agt ser cat His gct Ala 435 aac | 340 gag Glu ccg Pro atc Ile cag Gln cac His 420 cca Pro | cag Gln ccc Pro cca Pro tca Ser 405 cgg Arg act Thr | ggc Gly act Thr gtg Val 390 ggc Gly gcc Ala gga Gly | gag Glu tgg Trp 375 act Thr tct Ser cac His ggc Gly | agg Arg 360 ccc Pro gca Ala tac Tyr tat Tyr cac His 440 ctt | 345 aga Arg aag Lys tcc Ser gag Glu gag Glu 425 cct Pro | aac Asn ccg Pro ctc Leu 410 aca Thr gtg Val | tcg Ser ctg Leu cct Pro 395 cgg Arg gaa Glu gtt Val | gct Ala gtg Val 380 cca Pro atc Ile ggc Gly cag Gln att | cca Pro 365 cct Pro ctt Leu gag Glu agc ctc Leu 445 ggg | 350 gaa Glu gcc Ala gag Glu gtg Val cga Arg 430 cat His | tcc Ser att Ile tgg Trp cag Gln 415 ggg Gly ggc Gly | atc Ile ccc Pro ccg Pro 400 ccc Pro gct Ala tac Tyr gat | 1104 1152 1200 1248 1296 |
| ctg Leu atc Ile 385 ctg Leu aag Lys gtc Val atg | Pro ctg Leu 370 tgc Cys tcc Ser cca Pro aaa Lys gaa Glu 450 | Cys 355 gtt Val agc ser agt ser cat His gct Ala 435 asc Asn | 340 gag Glu ccg Pro atc Ile cag Gln cac His 420 cca Pro | cag Gln ccc Pro cca Pro tca Ser 405 cgg Arg act Thr | ggc Gly act Thr gtg Val 390 ggc Gly gcc Ala gga Gly ctg Leu | gag Glu tgg Trp 375 act Thr tct Ser cac His ggc Gly gga Gly 455 | agg Arg 360 ccc Pro gca Ala tac Tyr tat Tyr cac His 440 ctt Leu | adda Arg aag Lys tcc Ser gag Glu gag Glu 425 cct Pro cag | aac Asn ccg Pro ctc Leu 410 aca Thr gtg Val atc | tcg Ser ctg Leu cct Pro 395 cgg Arg gaa Glu gtt Val ttc | gct Ala gtg Val 380 cca Pro atc Ile ggc Gly cag Gln att Ile 460 | cca Pro 365 cct Pro ctt Leu gag Glu agc Ser ctc Leu 445 ggg Gly | 350 gaa Glu gcc Ala gag Glu gtg Val cga Arga 430 cat His aca | tcc Ser att Ile tgg Trp cag Gln 415 ggg Gly gcc Gly | atc Ile ccc Pro ccg Pro 400 ccc Pro gct Ala tac Tyr gat Asp | 1104 1152 1200 1248 1296 |
| ctg Leu atc Ile 385 ctg Leu aag Lys gtc Val atg | Pro ctg Leu 370 tgc Cys tcc Ser cca Pro aaa Lys gaa Glu 450 cgg | Cys 355 gtt Val agc ser agt ser cat His gct Alas asc Asn | 340 gag Glu ccg Pro atc Ile cag Gln cac His 420 cca Pro aag Lys ctt | cag Gln ccc Pro cca Pro tca Ser 405 cgg Arg act Thr cct Pro | ggc Gly act Thr gtg Val 390 ggc Gly gcc Ala gga Gly ctg Leu | gag Glu tgg Trp 375 act Thr tct Ser cac His ggc Gly gga Gly 455 cac | agg Arg 360 ccc Pro gca Ala tac Tyr tat Tyr cac 440 ctt Leu | 345 aga Arg aag Lys tcc Ser gag Glu gag GSU 425 cct Pro cag GIn ttc | aac Asn ccg Pro ctc Leu ctg Leu 410 aca Thr gtg Val atc Ile tac | tcg Ser ctg Leu cct Pro 395 cgg Arg gaa Glu gtt Val ttc Phe | gct Ala gtg Val 380 cca Pro atc Ile ggc Gly cag Gln att 11e 460 gtg | cca Pro 365 cct Pro ctt Leu gag Glu agc Ser ctc Leu 445 ggg Gly cac | 350 gaa Glu gcc Ala gag Glu gtg Val cga Arg 430 cat His aca Thr cga | tcc Ser att Ile tgg Trp cag Gln 415 ggg Gly gct Ala atc | atc Ile ccc Pro ccg Pro 400 ccc Pro gct Ala tac Tyr gat Asp acg | 1104 1152 1200 1248 1296 1344 |
| ctg Leu atc Ile 385 ctg Leu aag Lys gtc Val atg | Pro ctg Leu 370 tgc Cys tcc Ser cca Pro aaa Lys gaa Glu 450 cgg | Cys 355 gtt Val agc ser agt ser cat His gct Alas asc Asn | 340 gag Glu ccg Pro atc Ile cag Gln cac His 420 cca Pro | cag Gln ccc Pro cca Pro tca Ser 405 cgg Arg act Thr cct Pro | ggc Gly act Thr gtg Val 390 ggc Gly gcc Ala gga Gly ctg Leu | gag Glu tgg Trp 375 act Thr tct Ser cac His ggc Gly gga Gly 455 cac | agg Arg 360 ccc Pro gca Ala tac Tyr tat Tyr cac 440 ctt Leu | 345 aga Arg aag Lys tcc Ser gag Glu gag GSU 425 cct Pro cag GIn ttc | aac Asn ccg Pro ctc Leu ctg Leu 410 aca Thr gtg Val atc Ile tac | tcg Ser ctg Leu cct Pro 395 cgg Arg gaa Glu gtt Val ttc Phe | gct Ala gtg Val 380 cca Pro atc Ile ggc Gly cag Gln att 11e 460 gtg | cca Pro 365 cct Pro ctt Leu gag Glu agc Ser ctc Leu 445 ggg Gly cac | 350 gaa Glu gcc Ala gag Glu gtg Val cga Arg 430 cat His aca Thr cga | tcc Ser att Ile tgg Trp cag Gln 415 ggg Gly gct Ala atc | atc Ile ccc Pro ccg Pro 400 ccc Pro gct Ala tac Tyr gat Asp acg | 1104 1152 1200 1248 1296 1344 1392 |

| | | | | | | | | | | | ata Ile | | | | | 1488 |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------------|------------|------------|------------|------------|------|
| | | | | atc | | | | | aaa | | aac Asn | | | | | 1536 |
| | | | gcg | | | | | | | | gcc Ala | | | | | 1584 |
| | | | | | | | | | | | acg Thr 540 | | | | | 1632 |
| | | | | | | | | | | | aga Arg | | | | | 1680 |
| | | | | | | | | | | | cga Arg | | | | | 1728 |
| | | | | | | | | | | | tgc Cys | | | | | 1776 |
| | | | | | | | | | | | aca Thr | | | | | 1824 |
| Val | Val 610 | Phe | Thr | Glu | Lys | Thr 615 | Thr | Asp | Gly | Gln | caa Gln 620 | Ile | Trp | Glu | Met | 1872 |
| Glu 625 | Ala | Thr | Val | Asp | Lys 630 | Asp | Lys | Ser | Gln | Pro 635 | aac Asn | Met | Leu | Phe | Val 640 | 1920 |
| Glu | Ile | Pro | Glu | Tyr 645 | Arg | Asn | Lys | His | Ile 650 | Arg | aca Thr | Pro | Val | Lys 655 | Val | 1968 |
| Asn | Phe | Tyr | Val 660 | Ile | Asn | Gly | Lys | Arg 665 | Lys | Arg | agt Ser | Gln | Pro 670 | Gln | His | 2016 |
| | | | | | | | | | | | gag Glu | | | | | 2064 |
| Tyr | Asp 690 | Pro | Thr | Leu | Ile | Cys 695 | Ser | Pro | Thr | His | gga Gly 700 | Gly | Leu | Gly | Ser | 2112 |
| Gln 705 | Pro | Tyr | Tyr | Pro | Gln 710 | His | Pro | Met | Val | Ala 715 | gag Glu | Ser | Pro | Ser | Cys 720 | 2160 |
| Leu | Val | Ala | Thr | Met 725 | Ala | Pro | Cys | Gln | Gln 730 | Phe | cgc Arg | Thr | Gly | Leu 735 | Ser | 2208 |
| Ser | Pro | Asp | Ala 740 | Arg | Tyr | Gln | Gln | Gln 745 | Asn | Pro | gcg Ala | Ala | Val 750 | Leu | Tyr | 2256 |
| Gln | Arg | Ser 755 | Lys | Ser | Leu | Ser | Pro 760 | Ser | Leu | Leu | Gly ggc | Tyr 765 | Gln | Gln | Pro | 2304 |
| Āla | Leu 770 | Met | Ala | Āla | Pro | Leu 775 | Ser | Leu | Ala | Asp | gct Ala 780 | His | Arg | Ser | Val | 2352 |
| Leu 785 | Val | His | Ala | Gly | Ser 790 | Gln | Gly | Gln | Ser | Ser 795 | gcc Ala | Leu | Leu | His | Pro 800 | 2400 |
| | _ | | | _ | - | _ | _ | | | | cac His | | | | | 2448 |

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aac cag cag ctg cgc tgc gga agc cac cag gag ttc cag cac atc atg
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Asn Gln Gln Leu Arg Cys Gly Ser His Gln Glu Phe Gln His Ile Met
                                      825
              820
                                                              830
tac tgc gag aat ttc gca cca ggc acc acc aga cct ggc ccg ccc ccg
                                                                                 2544
Tyr Cys Glu Asn Phe Ala Pro Gly Thr Thr Arg Pro Gly Pro Pro
          835
                                 840
                                                         845
gtc agt caa ggt cag agg ctg agc ccg ggt tcc tac ccc aca gtc att
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Val Ser Gln Gly Gln Arg Leu Ser Pro Gly Ser Tyr Pro Thr Val Ile
                            855
                                                    860
cag cag aat gcc acg agc caa aga gcc gcc aaa aac gga ccc ccg
                                                                                 2640
Gln Gln Asn Ala Thr Ser Gln Arg Ala Ala Lys Asn Gly Pro Pro
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                                               875
gtc agt gac caa aag gaa gta tta cct gcg ggg gtg acc att aaa cag
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Val Ser Asp Gln Lys Glu Val Leu Pro Ala Gly Val Thr Ile Lys Gln
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gag cag aac ttg gac cag acc tac ttg gat gat gtt aat gaa att atc
                                                                                 2736
Glu Gln Asn Leu Asp Gln Thr Tyr Leu Asp Asp Val Asn Glu Ile Ile
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                                      905
agg aag gag ttt tca gga cct cct gcc aga aat cag acg aga att ctg
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Arg Lys Glu Phe Ser Gly Pro Pro Ala Arg Asn Gln Thr Arg Ile Leu
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                                 920
                                                         925
cag tcg acg gta ccg cgg gcc cgg gat cca ccg gtc gcc acc atg gtg
                                                                                 2832
Gln Ser Thr Val Pro Arg Ala Arg Asp Pro Pro Val Ala Thr Met Val
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age aag gge gag gag etg tte ace ggg gtg gtg cee ate etg gte gag
                                                                                 2880
Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu
                       950
                                               955
ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc gag ggc
                                                                                 2928
Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly
                   965
                                          970
gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc tgc acc
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Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr
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acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc ctg acc
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Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu Thr
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                                 1000
                                                         1005
tac ggc \, gtg cag tgc ttc agc \, cgc tac ccc gac cac \, atg aag cag Tyr Gly \, Val Gln Cys Phe Ser \, Arg Tyr Pro Asp His \, Met Lys Gln \,
                                                                                 3069
    1010
                             1015
                                                      1020
cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag
His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                                                                                 3114
                             1030
                                                      1035
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc
                                                                                 3159
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala
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                             1045
                                                      1050
gag gtg \, aag ttc gag ggc gac \, acc ctg gtg aac cgc \, atc gag ctg Glu Val \, Lys Phe Glu Gly Asp \, Thr Leu Val Asn Arg \, Ile Glu Leu
                                                                                 3204
    1055
                             1060
                                                      1065
aag ggc \, atc gac ttc aag gag \, gac ggc aac atc ctg \, ggg cac aag Lys Gly \, Ile Asp \, Phe Lys Glu \, Asp Gly \, Asn \, Ile Leu \, Gly \, His Lys \,
                                                                                 3249
    1070
                             1075
                                                      1080
ctg gag tac aac tac aac agc cac aac gtc tat atc atg gcc gac
                                                                                 3294
Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp
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                             1090
                                                      1095
aag cag aag aac ggc atc aag gtg aac ttc aag atc cgc cac aac Lys Gln \, Lys \, Asn \, Gly \, Ile \, Lys \, Val \, Asn \, Phe \, Lys \, Ile \, Arg \, His \, Asn \,
                                                                                 3339
     1100
                              1105
                                                      1110
atc gag \, gac ggc agc gtg cag \, ctc gcc gac cac tac \, cag cag aac Ile Glu \, Asp Gly Ser Val Gln \, Leu Ala Asp His Tyr \, Gln Gln Asn \,
                                                                                 3384
                             1120
                                                      1125
acc ccc atc ggc gac ggc ccc gtg ctg ccc gac aac cac tac
                                                                                 3429
Thr Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr
                             1135
    1130
                                                      1140
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      ctg
      agc
      acc
      cag
      tcc
      gcc
      ctg
      agc
      aaa
      gac
      ccc
      aac
      gag
      aag
      cgc
      3474

      Leu
      Ser
      Thr
      Glu
      Ser
      Leu
      Ser
      Lys
      Asp
      Pro
      Asn
      Glu
      Lys
      Arg

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      His
      Met
      Val
      Leu
      Glu
      Phe
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      Thr
      Ala
      Gly
      Ile
      Thr

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290
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                                       300
Asp Ala Leu Asn Ser Leu Ala Thr Asp Ser Pro Cys Gly Ile Pro Pro
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                                    315
Lys Met Trp Lys Thr Ser Pro Asp Pro Ser Pro Val Ser Ala Ala Pro
                                330
              325
Ser Lys Ala Gly Leu Pro Arg His Ile Tyr Pro Ala Val Glu Phe Leu
          340
                            345
Gly Pro Cys Glu Gln Gly Glu Arg Arg Asn Ser Ala Pro Glu Ser Ile
                        360
                                          365
Leu Leu Val Pro Pro Thr Trp Pro Lys Pro Leu Val Pro Ala Ile Pro
                  375
                           380
Ile Cys Ser Ile Pro Val Thr Ala Ser Leu Pro Pro Leu Glu Trp Pro
                 390
                                    395
Leu Ser Ser Gln Ser Gly Ser Tyr Glu Leu Arg Ile Glu Val Gln Pro
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                                410
Lys Pro His His Arg Ala His Tyr Glu Thr Glu Gly Ser Arg Gly Ala
                425
       420
Val Lys Ala Pro Thr Gly Gly His Pro Val Val Gln Leu His Gly Tyr
                       440
Met Glu Asn Lys Pro Leu Gly Leu Gln Ile Phe Ile Gly Thr Ala Asp
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Glu Arg Ile Leu Lys Pro His Ala Phe Tyr Gln Val His Arg Ile Thr
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               470
Gly Lys Thr Val Thr Thr Ser Tyr Glu Lys Ile Val Gly Asn Thr
                               490
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Lys Val Leu Glu Ile Pro Leu Glu Pro Lys Asn Asn Met Arg Ala Thr
                            505
Ile Asp Cys Ala Gly Ile Leu Lys Leu Arg Asn Ala Asp Ile Glu Leu
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Arg Lys Gly Glu Thr Asp Ile Gly Arg Lys Asn Thr Arg Val Arg Leu
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                                       540
Val Phe Arg Val His Ile Pro Glu Ser Ser Gly Arg Ile Val Ser Leu
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Gln Thr Ala Ser Asn Pro Ile Glu Cys Ser Gln Arg Ser Ala His Glu
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Leu Pro Met Val Glu Arg Gln Asp Thr Asp Ser Cys Leu Val Tyr Gly
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Gly Gln Gln Met Ile Leu Thr Gly Gln Asn Phe Thr Ser Glu Ser Lys
              600 605
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Val Val Phe Thr Glu Lys Thr Thr Asp Gly Gln Gln Ile Trp Glu Met
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Glu Ala Thr Val Asp Lys Asp Lys Ser Gln Pro Asn Met Leu Phe Val
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                  630
Glu Ile Pro Glu Tyr Arg Asn Lys His Ile Arg Thr Pro Val Lys Val
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Asn Phe Tyr Val Ile Asn Gly Lys Arg Lys Arg Ser Gln Pro Gln His
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Phe Thr Tyr His Pro Val Pro Ala Ile Lys Thr Glu Pro Thr Asp Glu
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Tyr Asp Pro Thr Leu Ile Cys Ser Pro Thr His Gly Gly Leu Gly Ser
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                                       700
Gln Pro Tyr Tyr Pro Gln His Pro Met Val Ala Glu Ser Pro Ser Cys
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                                 715
Leu Val Ala Thr Met Ala Pro Cys Gln Gln Phe Arg Thr Gly Leu Ser
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                                730
Ser Pro Asp Ala Arg Tyr Gln Gln Asn Pro Ala Ala Val Leu Tyr
          740 745
Gln Arg Ser Lys Ser Leu Ser Pro Ser Leu Leu Gly Tyr Gln Gln Pro
                         760
                                           765
Ala Leu Met Ala Ala Pro Leu Ser Leu Ala Asp Ala His Arg Ser Val
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Leu Val His Ala Gly Ser Gln Gly Gln Ser Ser Ala Leu Leu His Pro
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Ser Pro Thr Asn Gln Gln Ala Ser Pro Val Ile His Tyr Ser Pro Thr
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Asn Gln Gln Leu Arg Cys Gly Ser His Gln Glu Phe Gln His Ile Met
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Tyr Cys Glu Asn Phe Ala Pro Gly Thr Thr Arg Pro Gly Pro Pro Pro
                                         845
                         840
Val Ser Gln Gly Gln Arg Leu Ser Pro Gly Ser Tyr Pro Thr Val Ile
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Gln Gln Gln Asn Ala Thr Ser Gln Arg Ala Ala Lys Asn Gly Pro Pro
                                    875
                 870
Val Ser Asp Gln Lys Glu Val Leu Pro Ala Gly Val Thr Ile Lys Gln
                          890
             885
Glu Gln Asn Leu Asp Gln Thr Tyr Leu Asp Asp Val Asn Glu Ile Ile
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Arg Lys Glu Phe Ser Gly Pro Pro Ala Arg Asn Gln Thr Arg Ile Leu
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Gln Ser Thr Val Pro Arg Ala Arg Asp Pro Pro Val Ala Thr Met Val
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Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu
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                 950
Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly
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                               970
                                                   975
Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr
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                             985
Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu Thr
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Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln
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Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu
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Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys
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Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp
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Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn
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   1100
Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn
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Thr Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr
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Leu Ser Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg
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<213> Artificial Sequence

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gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc
                                                                       96
Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
                                25
gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc
                                                                      144
Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
                                                45
                            40
        35
                                                                      192
tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
                        55
ctg acc tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag
                                                                      240
Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
cag cac gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag
                                                                      288
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
                                    90
                8.5
cgc acc atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag
                                                                      336
Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
                                                     110
                                105
                                                                      384
gtg aag ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
                                                125
                             120
        115
                                                                      432
atc gac ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
                        135
                                                                      480
 aac tac aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac
Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
                                         155
                    150
 ggc atc aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc
                                                                      528
 Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
                                     170
                 165
 gtg cag ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc
                                                                       576
 Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
                                                    190
                                 185
             180
 ccc gtg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg
                                                                       624
 Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
                             200
                                                 205
                                                                       672
 age aaa gae eee aac gag aag ege gat eac atg gte etg gag tte
```

235

220

720

768

816

Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Glu Phe

gtg acc gcc gcc ggg atc act ctc ggc atg gac gag ctg tac aag tcc

Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser

gga ctc aga tct cga ggg agc atg ggc acc ttg cgg gat tta cag tac

Gly Leu Arg Ser Arg Gly Ser Met Gly Thr Leu Arg Asp Leu Gln Tyr

gcg ctc cag gag aag atc gag gag ctg agg cag cgg gat gct ctc atc

Ala Leu Gln Glu Lys Ile Glu Glu Leu Arg Gln Arg Asp Ala Leu Ile

215

230

245

| | | | | | | | | 265 | | | | | 270 | | | |
|--------------|------------|--------------|--------------|--------------|----------------|------------|--------------|------------|------------|------------|-------------|----------------|------------|------------|----------------|-------|
| ~ 3.0 | asa | cta | 260 gag | cta | gag | t.t.a | gat | caq | aaq | qac | gaa | ctg | atc | cag | aag | 864 |
| Asp | Glu | Leu 275 | Glu | Leu | Glu | Leu | Asp 280 | Gln | Lys | Asp | Ğlu | Leu 285 | Ile | Gln | Lys | |
| cta | caq | 220 | gag | ctg | gac | aag | tac | cgc | tcg | gtg | atc | cga | cca | gcc | acc | 912 |
| Leu | Gln 290 | Asn | Glu | Leu | Asp | Lys 295 | Tyr | Arg | Ser | Val | 300 | Arg | PIO | Ala | TIIL | 0.50 |
| cag | cag | gcg | cag | aag | cag | agc | gcg | agc | acc | ttg | cag | ggc | gag | ccg | cgc | 960 |
| | Gln | Ala | Gln | Lys | | Ser | Ala | Ser | 'l'nr | ьеи 315 | GIN | СТА | GIU | PIO | 320 | |
| 305 | 224 | caa | cad | aca | 310 atc | tee | acc | gag | ccc | | qcc | ttc | gac | atc | | 1008 |
| Thr | Lys | Arg | Gln | Ala 325 | Ile | Ser | Ala | Glu | Pro 330 | Thr | Ála | Phe | Āsp | Ile 335 | Gln | |
| σat | ctc | agc | cat | ata | acc | ctg | ccc | ttc | tac | ccc | aag | agc | cca | cag | tcc | 1056 |
| Asp | Leu | Ser | His 340 | Val | Thr | Leu | Pro | Phe 345 | Tyr | Pro | ьуs | ser | 350 | GIII | ser | 1104 |
| aag | gat | ctt | ata | aag | gaa | gct | atc | ctt | gac | aat | gac | ttt | atg | aag | aac | 1104 |
| _ | | 355 | | | | | 360 | Leu | | | | 365 | | | | 1150 |
| ttg | gag | ctg | tcg | cag | atc | cag | gag | att | gtg | gat | tgt | atg | tac | Dro | grg | 1152 |
| Leu | | Leu | Ser | Gln | Ile | Gln 375 | Glu | Ile | vaı | Asp | 380 | мес | ıyı | FIO | Val | |
| asa | 370 tat | aac | ааσ | gac | agt | tac | atc | atc | aaa | gaa | gga | gac | gtg | ggg | tca | 1200 |
| Glu | Tyr | Gly | Lys | Asp | Ser | Cys | Ile | Ile | Lys | Glu | Gly | Asp | Val | Gly | Ser | |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 | 1248 |
| ctg | gtg | tat | gtc | atg | gaa | gat | ggt | aag | gtt | gaa | gtt | Thr | Lvs | Glu | Glv | 1240 |
| Leu | Val | Tyr | Val | Met 405 | GIU | Asp | GIY | Lys | 410 | GIU | Val | 1111 | ביים | 415 | <u> </u> | |
| ata | aad | t.t.a | tat | acc | atq | ggt | cca | gga | aaa | gtg | ttt | ggg | gaa | ttg | gct | 1296 |
| Val | Lys | Leu | Cys | Thr | Met | бĺу | Pro | Gly | Lys | Val | Phe | Gly | GIU | Leu | Ala | |
| | | | 420 | | | | | 425 | | | | | 430 | | | 1344 |
| att | ctt | tac | aac | tgt | acc Thr | cgg | aca Thr | gcg Ala | Thr | Val | Lvs | Thr | Leu | Val | Asn | |
| | | 435 | 1 | | | | 440 | | | | | 445 | | | | |
| gta | aaa | ctc | taa | gcc | att | gat | cga | caa | tgt | ttt | caa | aca | ata | atg | atg | 1392 |
| Val | Lys | Leu | Trp | Ala | Ile | Asp | Arg | Gln | Cys | Phe | GIn 460 | Inr | ire | мес | Met | |
| | 450 | ~~~ | cto | a+c | . aan | 455 | | gag | tat | atσ | | | tta | aaa | agc | 1440 |
| agg Arg | aca Thr | Glv | Leu | Ile | Lys | His | Thr | Glu | Tyr | Met | Ğlu | Phe | Leu | Lys | ser | |
| 165 | | | | | 470 |) | | | | 475 | | | | | 400 | 1488 |
| gtt | cca | aca | tto | cag | ago | ctt | cct | gaa | gag | ato | CTC | : agc | aag Tvs | Leu | gct | 1400 |
| Val | . Pro | Thr | : Phe | 485 | | Leu | PIO | GIU | 490 | . 110 | . псс | . 501 | 270 | 495 | Ala | |
| αat | : atc | ctt | gaa | gac | acc | cac | tat | gaa | aat | gga | gaa | a tat | att | ato | agg | 1536 |
| Asp | Val | . Le | ı Ğlu | ı Ğlu | Thr | His | Tyr | GIU | ASI | Gly | / Glu | ı Tyr | 110 | 110 | Arg | |
| | | | 500 |) | | | . ++ | 505 +++ | a t c | ato | age | r aaa | 510 gga | | gta | 1584 |
| caa | a ggt | gca , al: | a aga | a ggg | g gac , Asr | Thr | Phe | Phe | Ile | : Ile | Sei | . Lys | Gly | Thi | Val | |
| | | 51 | 5 | | | | 520 |) | | | | 525 |) | | | 1.520 |
| aat | t gto | ac | t cgt | gaa | a gad | c tca | a ccc | gagt | gaa | gad | c cca | gto | ttt | ctt | aga | 1632 |
| Ası | | | r Ar | g Glu | ASP | Sei 535 | r Pro | ser | GIU | ı Ası | 5 Pro | o val | LPITE | ; re | ı Arg | |
| 201 | 530 | | 2 22 | a aa | a dad | r tad | r tti | . aaa | gad | ı aaa | a gc | c ttg | g cag | g ggg | g gaa | 1680 |
| Th | r Lei | ı Gl | y Ly: | s Gl | y Asp | o Tri | Phe | e Ğĺş | / Gli | Ly: | s Āla | a Lei | ı Glr | n Gl | y Giu | |
| 5.4 | 5 | | | | 550 | 0 | | | | 55 | כ | | | | 260 | 1728 |
| ga | t gt | g ag | a ac | a gc | a aa | c gta | a ati | t gct | gca Ala | a gaa | agc n Al | t gto a Vai | a act | r Cv: | c ctt s Leu | 1,20 |
| | | | | 56 | 5 | | | | 570 |) | | | | 5/ | 5 | |
| at. | g at | t qa | c ag | а па | a ta | t tt | t aa | a cat | tte | g at | t gg | a gg | g ct | g ga | t gat | 1776 |
| ٧a | í Il | e Ás | p Ar | g As | p Se | r Ph | е Lу | s Hi | s Lei | u Il | e Gl | y Gl | y Le | u AS | p Asp | |
| | | | 58 | 0 | | | | 583 | 5 | | | | 29 | U | | 1824 |
| gt | t tc | t aa r Ae | t aa n Lu | a gc s Al | a ta a Tv | r Gl | a ya u As | p Ala | a Gl | u Al | a Ly | s Al | a Ly | s Ty | t gaa r Glu | |
| va | _ SE | _ ^> | uy | _ 131 | ~ +1 | | | • | | | - | | | | | |

| | | 595 | | | | | 600 | | | | | 605 | | | | |
|------|------------|-------------|------------|--------------|------------|------------|-------|------------|------------------|------------|------------|------------|-----|------------|------------|------|
| act | gaa | | gct | ttc | ttc | gcc | | ctq | aaq | ctg | tct | | ttc | aac | atc | 1872 |
| Āla | Ğlu | Ālā | Ála | Phe | Phe | Ala | Asn | Leu | Lys | Leu | Ser | Asp | Phe | Asn | Ile | |
| | 610 | | | | | 615 | ~~+ | ++- | ~~~ | 222 | 620 | 722 | cta | atc | cad | 1920 |
| att | gat | acc | ctt Leu | gga Glw | gtt Val | Glv | Glv | Phe | Glv | Ara | Val | Glu | Leu | Val | Gln | 1320 |
| 625 | Asp | 1111 | Бец | GLY | 630 | O L y | O± y | 1110 | O _T y | 635 | | | | | 640 | |
| ttq | aaa | agt | gaa | gaa | tcc | aaa | acg | ttt | gca | atg | aag | att | ctc | aag | aaa | 1968 |
| Leu | Lys | Ser | Ğlu | | Ser | Lys | Thr | Phe | | Met | Lys | Ile | Leu | | Lys | |
| | | -++ | gtg | 645 | 2.22 | 202 | a 2 a | G 2 G | 650 | Cac | atc | cac | tca | 655 | aaq | 2016 |
| CGT | Cac | Tle | Val | Asn | Thr | Ara | Gln | Gln | Glu | His | Ile | Ara | Ser | Glu | Lys | 2010 |
| ALG | 1113 | 110 | 660 | пор | | 9 | 02 | 665 | | | | | 670 | | - | |
| cag | atc | atg | cag | ggg | gct | cat | tcc | gat | ttc | ata | gtg | aga | ctg | tac | aga | 2064 |
| Gln | Ile | | Gln | Gly | Ala | His | | Asp | Phe | Ile | Val | | Leu | Tyr | Arg | |
| | | 675 | gac | 200 | 222 | + - + | 680 | + = + | ata | tta | atσ | 685 gaa | act | tat | cta | 2112 |
| Thr | Phe | Lvs | Asp | Ser | Lvs | Tvr | Leu | Tvr | Met | Leu | Met | Glu | Ala | Cys | Leu | |
| 1111 | 690 | | | | -1- | 695 | | - | | | 700 | | | - | | |
| ggt | gga | gag | ctc | tgg | acc | att | ctc | agg | gat | aga | ggt | tcg | ttt | gaa | gat | 2160 |
| - | Gly | Glu | Leu | Trp | | Ile | Leu | Arg | Asp | Arg 715 | Gly | Ser | Phe | Glu | 720 | |
| 705 | 202 | 200 | aga | +++ | 710 tac | aca | gca | tat | ata | . – - | gaa | act | ttt | acc | | 2208 |
| Ser | Thr | Thr | Arg | Phe | Tyr | Thr | Ala | Cys | Val | Val | Glu | Ala | Phe | Āla | Tyr | |
| | | | | 725 | | | | | 730 | | | | | 735 | | |
| ctg | cat | tcc | aaa | gga | atc | att | tac | agg | gac | ctc | aag | cca | gaa | aat | ctc | 2256 |
| Leu | His | Ser | Lys 740 | Gly | Ile | Ile | Tyr | Arg 745 | Asp | Leu | ьуs | Pro | 750 | Asn | Leu | |
| atc | cta | gat | cac | cga | aat. | tat | acc | | cta | att | gat | ttt | | ttt | gca | 2304 |
| Ile | Leu | Asp | His | Arg | Gly | Tyr | Ala | Lys | Leu | Val | Ásp | Phe | Gly | Phe | Ala | |
| | | 755 | | | | | 760 | | | | | 765 | | | | 0250 |
| aag | aaa | ata | gga | ttt | gga | aag | aaa | aca | tgg | act | ttt | tgt | ggg | act | cca Pro | 2352 |
| Lys | Lуs 770 | тте | Ğly | Pne | GIĀ | ьуs 775 | ьуѕ | THE | тгр | 1111 | 780 | Cys | СТУ | 1111 | LIO | |
| σασ | | gta | gcc | cca | gag | | atc | ctg | aac | aaa | | cat | gac | att | tca | 2400 |
| Glu | Tyr | Val | Ála | Pro | Glu | Ile | Ile | Leu | Asn | Lys | Gly | His | Asp | Ile | Ser | |
| 785 | | | | | 790 | | | | | 795 | | | ~+~ | 20+ | 800 | 2448 |
| gcc | gac | tac | tgg Trp | tca | ctg | gga | atc | Cta | atg Met | Tur | Glu | Len | Len | Thr | Glv | 2440 |
| Ата | АБР | тут | пр | 805 | пец | OLY | 110 | шси | 810 | - 1 - | O_Lu | | | 815 | 2 | |
| agc | cca | cct | ttc | tca | ggc | cca | gat | cct | atg | aaa | acc | tat | aac | atc | ata | 2496 |
| Ser | Pro | Pro | Phe | Ser | Gly | Pro | Asp | | Met | Lys | Thr | Tyr | | Ile | Ile | |
| | | ~~~ | 820 att | ~ ~ ~ | 2+4 | 2+2 | ~~~ | 825 | cca | aan | aan | att | 830 | aaa | aat | 2544 |
| Len | Ara | 999 Gl v | Ile | Asp | Met | Ile | Glu | Phe | Pro | Lvs | Lys | Ile | Ala | Lys | Asn | |
| | _ | 835 | | | | | 840 | | | | | 845 | | | | |
| gct | gct | aat | tta | att | aaa | aaa | cta | tgc | agg | gac | aat | cca | tca | gaa | aga | 2592 |
| Ala | | Asn | Leu | Ile | Lys | | Leu | Cys | Arg | Asp | Asn 860 | Pro | Ser | Glu | Arg | |
| ++ > | 850 | 22+ | ttg | 222 | aat | 855 gga | αta | aaa | gac | at.t. | | aaα | cac | aaa | taa | 2640 |
| Leu | Glv | Asn | Leu | Lys | Asn | Gly | Val | Lys | Asp | Ile | Gln | Lys | His | Lys | Trp | |
| 865 | _ | | | | 870 | | | | | 875 | | | | | 880 | |
| ttt | gag | ggc | ttt | aac | tgg | gaa | ggc | tta | aga | aaa | ggt | acc | ttg | aca | cct | 2688 |
| Phe | Glu | Gly | Phe | Asn 885 | | Glu | GLY | Leu | Arg 890 | | СТА | Thr | ьeu | 895 | PIO | |
| cct | ata | ata | cca | | | αca | tca | ccc | | | aca | agt | aat | | gac | 2736 |
| Pro | Ile | Ile | Pro | Ser | Val | Ála | Ser | Pro | Thr | Ásp | Thr | Ser | Asn | Phe | Asp | |
| | | | 900 | | | | | 905 | | | | | 910 | | | 0704 |
| agt | ttc | cct | gag | gac | aac | gat | gaa | cca | cca | cct | gat | gac | aac | cca Ser | gga Glv | 2784 |
| Ser | Pne | 915 | | Asp | ASN | ASP | 920 | | FIO | ETO | лэр | 925 | | Jer | Gly | |
| taa | gat | | gac | ttc | : taa | ı | | | | | | | | | | 2802 |
| | | | Asp | | | | | | | | | | | | | |
| _ | _ | | | | | | | | | | | | | | | |

<211> 933

<212> PRT

<213> Artificial Sequence

<220>

<223> EGFP-PKG fusion

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355
                           360
                                               365
Leu Glu Leu Ser Gln Ile Gln Glu Ile Val Asp Cys Met Tyr Pro Val
                       375
                                           380
Glu Tyr Gly Lys Asp Ser Cys Ile Ile Lys Glu Gly Asp Val Gly Ser
                   390
                                       395
Leu Val Tyr Val Met Glu Asp Gly Lys Val Glu Val Thr Lys Glu Gly
               405
                                   410
Val Lys Leu Cys Thr Met Gly Pro Gly Lys Val Phe Gly Glu Leu Ala
                               425
Ile Leu Tyr Asn Cys Thr Arg Thr Ala Thr Val Lys Thr Leu Val Asn
                           440
Val Lys Leu Trp Ala Ile Asp Arg Gln Cys Phe Gln Thr Ile Met Met
                     455
                                   460
Arg Thr Gly Leu Ile Lys His Thr Glu Tyr Met Glu Phe Leu Lys Ser
           470
                                      475
Val Pro Thr Phe Gln Ser Leu Pro Glu Glu Ile Leu Ser Lys Leu Ala
                                  490
              485
Asp Val Leu Glu Glu Thr His Tyr Glu Asn Gly Glu Tyr Ile Ile Arg
                               505
Gln Gly Ala Arg Gly Asp Thr Phe Phe Ile Ile Ser Lys Gly Thr Val
       515
                           520
                                              525
Asn Val Thr Arg Glu Asp Ser Pro Ser Glu Asp Pro Val Phe Leu Arg
                      535
                                          540
Thr Leu Gly Lys Gly Asp Trp Phe Gly Glu Lys Ala Leu Gln Gly Glu
                   550
                                      555
Asp Val Arg Thr Ala Asn Val Ile Ala Ala Glu Ala Val Thr Cys Leu
              565
                                  570
Val Ile Asp Arg Asp Ser Phe Lys His Leu Ile Gly Gly Leu Asp Asp
                              585
Val Ser Asn Lys Ala Tyr Glu Asp Ala Glu Ala Lys Ala Lys Tyr Glu
      595
                          600
                                              605
Ala Glu Ala Ala Phe Phe Ala Asn Leu Lys Leu Ser Asp Phe Asn Ile
                      615
                                         620
Ile Asp Thr Leu Gly Val Gly Gly Phe Gly Arg Val Glu Leu Val Gln
                  630
                                      635
Leu Lys Ser Glu Glu Ser Lys Thr Phe Ala Met Lys Ile Leu Lys Lys
                                  650
Arg His Ile Val Asp Thr Arg Gln Gln Glu His Ile Arg Ser Glu Lys
           660
                               665
Gln Ile Met Gln Gly Ala His Ser Asp Phe Ile Val Arg Leu Tyr Arg
                           680
                                               685
Thr Phe Lys Asp Ser Lys Tyr Leu Tyr Met Leu Met Glu Ala Cys Leu
                       695
                                           700
Gly Gly Glu Leu Trp Thr Ile Leu Arg Asp Arg Gly Ser Phe Glu Asp
                   710
                                       715
Ser Thr Thr Arg Phe Tyr Thr Ala Cys Val Val Glu Ala Phe Ala Tyr
               725
                                   730
Leu His Ser Lys Gly Ile Ile Tyr Arg Asp Leu Lys Pro Glu Asn Leu
           740
                               745
Ile Leu Asp His Arg Gly Tyr Ala Lys Leu Val Asp Phe Gly Phe Ala
                          760
Lys Lys Ile Gly Phe Gly Lys Lys Thr Trp Thr Phe Cys Gly Thr Pro
                       775
                                          780
Glu Tyr Val Ala Pro Glu Ile Ile Leu Asn Lys Gly His Asp Ile Ser
                   790
                                       795
Ala Asp Tyr Trp Ser Leu Gly Ile Leu Met Tyr Glu Leu Leu Thr Gly
               805
                                   810
Ser Pro Pro Phe Ser Gly Pro Asp Pro Met Lys Thr Tyr Asn Ile Ile
                               825
Leu Arg Gly Ile Asp Met Ile Glu Phe Pro Lys Lys Ile Ala Lys Asn
                          840
                                              845
Ala Ala Asn Leu Ile Lys Lys Leu Cys Arg Asp Asn Pro Ser Glu Arg
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Leu Gly Asn Leu Lys Asn Gly Val Lys Asp Ile Gln Lys His Lys Trp
                    870
Phe Glu Gly Phe Asn Trp Glu Gly Leu Arg Lys Gly Thr Leu Thr Pro
                885
                                    890
Pro Ile Ile Pro Ser Val Ala Ser Pro Thr Asp Thr Ser Asn Phe Asp
                                905
Ser Phe Pro Glu Asp Asn Asp Glu Pro Pro Pro Asp Asp Asn Ser Gly
                            920
        915
                                                925
Trp Asp Ile Asp Phe
    930
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                                                                       48
Met Gly Thr Leu Arg Asp Leu Gln Tyr Ala Leu Gln Glu Lys Ile Glu
               5
1
                                    10
gag ctg agg cag cgg gat gct ctc atc gac gag ctg gag ctg gag ttg
                                                                       96
Glu Leu Arg Gln Arg Asp Ala Leu Ile Asp Glu Leu Glu Leu Glu Leu
                                25
gat cag aag gac gaa ctg atc cag aag ctg cag aac gag ctg gac aag
                                                                      144
Asp Gln Lys Asp Glu Leu Ile Gln Lys Leu Gln Asn Glu Leu Asp Lys
                            40
                                                                      192
tac ege teg gtg ate ega eea gee ace eag eag geg eag aag eag age
Tyr Arg Ser Val Ile Arg Pro Ala Thr Gln Gln Ala Gln Lys Gln Ser
                        55
                                            60
gcg agc acc ttg cag ggc gag ccg cgc acc aag cgg cag gcg atc tcc
                                                                      240
Ala Ser Thr Leu Gln Gly Glu Pro Arg Thr Lys Arg Gln Ala Ile Ser
                   70
                                        75
gcc gag ccc acc gcc ttc gac atc cag gat ctc agc cat gtg acc ctg
                                                                      288
Ala Glu Pro Thr Ala Phe Asp Ile Gln Asp Leu Ser His Val Thr Leu
                                    90
ccc ttc tac ccc aag agc cca cag tcc aag gat ctt ata aag gaa gct
                                                                      336
Pro Phe Tyr Pro Lys Ser Pro Gln Ser Lys Asp Leu Ile Lys Glu Ala
            100
                                105
atc ctt gac aat gac ttt atg aag aac ttg gag ctg tcg cag atc cag
                                                                      384
Ile Leu Asp Asn Asp Phe Met Lys Asn Leu Glu Leu Ser Gln Ile Gln
        115
                            120
                                                125
gag att gtg gat tgt atg tac ccg gtg gag tat ggc aag gac agt tgc
                                                                      432
Glu Ile Val Asp Cys Met Tyr Pro Val Glu Tyr Gly Lys Asp Ser Cys
                        135
                                            140
atc atc aaa gaa gga gac gtg ggg tca ctg gtg tat gtc atg gaa gat
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Ile Ile Lys Glu Gly Asp Val Gly Ser Leu Val Tyr Val Met Glu Asp
145
                    150
                                        155
ggt aag gtt gaa gtt aca aaa gaa ggt gtg aag ttg tgt acc atg ggt
                                                                      528
Gly Lys Val Glu Val Thr Lys Glu Gly Val Lys Leu Cys Thr Met Gly
                                    170
cca gga aaa gtg ttt ggg gaa ttg gct att ctt tac aac tgt acc cgg
                                                                      576
Pro Gly Lys Val Phe Gly Glu Leu Ala Ile Leu Tyr Asn Cys Thr Arg
            180
                                185
aca gcg acc gtc aag act ctt gta aat gta aaa ctc tgg gcc att gat
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Thr Ala Thr Val Lys Thr Leu Val Asn Val Lys Leu Trp Ala Ile Asp
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                            200
                                                205
cga caa tgt ttt caa aca ata atg atg agg aca gga ctc atc aag cat
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Arg Gln Cys Phe Gln Thr Ile Met Met Arg Thr Gly Leu Ile Lys His
                        215
                                           220
acc gag tat atg gaa ttt tta aaa agc gtt cca aca ttc cag agc ctt
                                                                      720
Thr Glu Tyr Met Glu Phe Leu Lys Ser Val Pro Thr Phe Gln Ser Leu
                    230
                                        235
cct gaa gag atc ctc agc aag ctt gct gat gtc ctt gaa gag acc cac
                                                                      768
Pro Glu Glu Ile Leu Ser Lys Leu Ala Asp Val Leu Glu Glu Thr His
                245
                                    250
tat gaa aat gga gaa tat att atc agg caa ggt gca aga ggg gac acc
                                                                      816
Tyr Glu Asn Gly Glu Tyr Ile Ile Arg Gln Gly Ala Arg Gly Asp Thr
            260
                                265
                                                     270
ttc ttt atc atc agc aaa gga acg gta aat gtc act cgt gaa gac tca
                                                                      864
Phe Phe Ile Ile Ser Lys Gly Thr Val Asn Val Thr Arg Glu Asp Ser
                            280
ccg agt gaa gac cca gtc ttt ctt aga act tta gga aaa gga gac tgg
                                                                      912
Pro Ser Glu Asp Pro Val Phe Leu Arg Thr Leu Gly Lys Gly Asp Trp
                        295
                                            300
ttt gga gag aaa gcc ttg cag ggg gaa gat gtg aga aca gca aac gta
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Phe Gly Glu Lys Ala Leu Gln Gly Glu Asp Val Arg Thr Ala Asn Val
                    310
                                        315
att gct gca gaa gct gta acc tgc ctt gtg att gac aga gac tct ttt
                                                                     1008
Ile Ala Ala Glu Ala Val Thr Cys Leu Val Ile Asp Arg Asp Ser Phe
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aaa cat ttg att gga ggg ctg gat gat gtt tct aat aaa gca tat gaa
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Lys His Leu Ile Gly Gly Leu Asp Asp Val Ser Asn Lys Ala Tyr Glu
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gat gca gaa gct aaa gca aaa tat gaa gct gaa gcg gct ttc ttc gcc
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Asp Ala Glu Ala Lys Ala Lys Tyr Glu Ala Glu Ala Ala Phe Phe Ala
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                                                365
aac ctg aag ctg tct gat ttc aac atc att gat acc ctt gga gtt gga
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Asn Leu Lys Leu Ser Asp Phe Asn Ile Ile Asp Thr Leu Gly Val Gly
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                        375
ggt ttc gga cga gta gaa ctg gtc cag ttg aaa agt gaa gaa tcc aaa
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Gly Phe Gly Arg Val Glu Leu Val Gln Leu Lys Ser Glu Glu Ser Lys
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                                       395
acg ttt gca atg aag att ctc aag aaa cgt cac att gtg gac aca aga
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Thr Phe Ala Met Lys Ile Leu Lys Lys Arg His Ile Val Asp Thr Arg
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cag cag gag cac atc cgc tca gag aag cag atc atg cag ggg gct cat
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Gln Glu His Ile Arg Ser Glu Lys Gln Ile Met Gln Gly Ala His
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tcc gat ttc ata gtg aga ctg tac aga aca ttt aag gac agc aaa tat
                                                                     1344
Ser Asp Phe Ile Val Arg Leu Tyr Arg Thr Phe Lys Asp Ser Lys Tyr
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                                                445
ttg tat atg ttg atg gaa gct tgt cta ggt gga gag ctc tgg acc att
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Leu Tyr Met Leu Met Glu Ala Cys Leu Gly Gly Glu Leu Trp Thr Ile
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                        455
                                            460
ctc agg gat aga ggt tcg ttt gaa gat tct aca acc aga ttt tac aca
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Leu Arg Asp Arg Gly Ser Phe Glu Asp Ser Thr Thr Arg Phe Tyr Thr
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gca tgt gtg gta gaa gct ttt gcc tat ctg cat tcc aaa gga atc att
                                                                     1488
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Ala Cys Val Val Glu Ala Phe Ala Tyr Leu His Ser Lys Gly Ile Ile
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Tyr Arg Asp Leu Lys Pro Glu Asn Leu Ile Leu Asp His Arg Gly Tyr
                                505
                                                    510
                                                                     1584
gcc aaa ctg gtt gat ttt ggc ttt gca aag aaa ata gga ttt gga aag
Ala Lys Leu Val Asp Phe Gly Phe Ala Lys Lys Ile Gly Phe Gly Lys
                            520
                                                525
aaa aca tgg act ttt tgt ggg act cca gag tat gta gcc cca gag atc
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Lys Thr Trp Thr Phe Cys Gly Thr Pro Glu Tyr Val Ala Pro Glu Ile
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                                            540
atc ctg aac aaa ggc cat gac att tca gcc gac tac tgg tca ctg gga
                                                                     1680
Ile Leu Asn Lys Gly His Asp Ile Ser Ala Asp Tyr Trp Ser Leu Gly
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atc cta atg tat gaa ctc ctg act ggc agc cca cct ttc tca ggc cca
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Ile Leu Met Tyr Glu Leu Leu Thr Gly Ser Pro Pro Phe Ser Gly Pro
                                    570
                565
                                                                     1776
gat cct atg aaa acc tat aac atc ata ttg agg ggg att gac atg ata
Asp Pro Met Lys Thr Tyr Asn Ile Ile Leu Arg Gly Ile Asp Met Ile
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                                                    590
gaa ttt cca aag aag att gcc aaa aat gct gct aat tta att aaa aaa
                                                                     1824
Glu Phe Pro Lys Lys Ile Ala Lys Asn Ala Ala Asn Leu Ile Lys Lys
                            600
cta tgc agg gac aat cca tca gaa aga tta ggg aat ttg aaa aat gga
                                                                     1872
Leu Cys Arg Asp Asn Pro Ser Glu Arg Leu Gly Asn Leu Lys Asn Gly
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                                            620
gta aaa gac att caa aag cac aaa tgg ttt gag ggc ttt aac tgg gaa
                                                                     1920
Val Lys Asp Ile Gln Lys His Lys Trp Phe Glu Gly Phe Asn Trp Glu
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                    630
ggc tta aga aaa ggt acc ttg aca cct cct ata ata cca agt gtt gca
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Gly Leu Arg Lys Gly Thr Leu Thr Pro Pro Ile Ile Pro Ser Val Ala
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                                    650
tca ccc aca gac aca agt aat ttt gac agt ttc cct gag gac aac gat
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Ser Pro Thr Asp Thr Ser Asn Phe Asp Ser Phe Pro Glu Asp Asn Asp
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gaa cca cct gat gac aac tca gga tgg gat ata gac ttc tcg gat
Glu Pro Pro Pro Asp Asp Asn Ser Gly Trp Asp Ile Asp Phe Ser Asp
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cca ccg gtc gcc acc atg gtg agc aag ggc gag gag ctg ttc acc ggg
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Pro Pro Val Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly
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gtg gtg ccc atc ctg gtc gag ctg gac ggc gac gta aac ggc cac aag
Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly His Lys
                                        715
                    710
ttc agc gtg tcc ggc gag ggc gag ggc gat gcc acc tac ggc aag ctg
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Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu
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                                                                     2256
acc ctg aag ttc atc tgc acc acc ggc aag ctg ccc gtg ccc tgg ccc
Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro
                                745
            740
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acc ctc qtq acc acc ctq acc tac ggc gtg cag tgc ttc agc cgc tac
Thr Leu Val Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr
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                            760
ccc gac cac atg aag cag cac gac ttc ttc aag tcc gcc atg ccc gaa
                                                                     2352
Pro Asp His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu
                        775
                                             780
                                                                     2400
ggc tac qtc cag gag cgc acc atc ttc ttc aag gac gac ggc aac tac
Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr
785
aag acc cgc gcc gag gtg aag ttc gag ggc gac acc ctg gtg aac cgc
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Lys Thr Arq Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg
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                                    810
atc gag ctg aag ggc atc gac ttc aag gag gac ggc aac atc ctg ggg
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Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly
                                825
                                                    830
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cac aag ctg gag tac aac tac aac agc cac aac gtc tat atc atg gcc
His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala
                           840
       835
gac aag cag aag aac ggc atc aag gtg aac ttc aag atc cgc cac aac
                                                                    2592
Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn
                                           860
                       855
                                                                    2640
atc gag gac ggc agc gtg cag ctc gcc gac cac tac cag cag aac acc
Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr
                   870
                                       875
                                                                    2688
ccc atc ggc gac ggc ccc gtg ctg ccc gac aac cac tac ctg agc
Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser
               885
                                   890
acc cag tee gee etg age aaa gae eee aac gag aag ege gat eac atg
                                                                    2736
Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met
                               905
gtc ctg ctg gag ttc gtg acc gcc gcc ggg atc act ctc ggc atg gac
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Asp Gln Lys Asp Glu Leu Ile Gln Lys Leu Gln Asn Glu Leu Asp Lys
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                                                45
Tyr Arg Ser Val Ile Arg Pro Ala Thr Gln Gln Ala Gln Lys Gln Ser
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Ala Ser Thr Leu Gln Gly Glu Pro Arg Thr Lys Arg Gln Ala Ile Ser
                    70
                                        75
Ala Glu Pro Thr Ala Phe Asp Ile Gln Asp Leu Ser His Val Thr Leu
                                    90
                8.5
Pro Phe Tyr Pro Lys Ser Pro Gln Ser Lys Asp Leu Ile Lys Glu Ala
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170

110

125

140

155

105

Ile Leu Asp Asn Asp Phe Met Lys Asn Leu Glu Leu Ser Gln Ile Gln 120

Glu Ile Val Asp Cys Met Tyr Pro Val Glu Tyr Gly Lys Asp Ser Cys

Ile Ile Lys Glu Gly Asp Val Gly Ser Leu Val Tyr Val Met Glu Asp

Gly Lys Val Glu Val Thr Lys Glu Gly Val Lys Leu Cys Thr Met Gly

Pro Gly Lys Val Phe Gly Glu Leu Ala Ile Leu Tyr Asn Cys Thr Arg

135

150

115

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185
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Thr Ala Thr Val Lys Thr Leu Val Asn Val Lys Leu Trp Ala Ile Asp
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Arg Gln Cys Phe Gln Thr Ile Met Met Arg Thr Gly Leu Ile Lys His
                       215
                                          220
Thr Glu Tyr Met Glu Phe Leu Lys Ser Val Pro Thr Phe Gln Ser Leu
                                      235
                   230
Pro Glu Glu Ile Leu Ser Lys Leu Ala Asp Val Leu Glu Glu Thr His
                                   250
               245
Tyr Glu Asn Gly Glu Tyr Ile Ile Arg Gln Gly Ala Arg Gly Asp Thr
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Phe Phe Ile Ile Ser Lys Gly Thr Val Asn Val Thr Arg Glu Asp Ser
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Pro Ser Glu Asp Pro Val Phe Leu Arg Thr Leu Gly Lys Gly Asp Trp
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Phe Gly Glu Lys Ala Leu Gln Gly Glu Asp Val Arg Thr Ala Asn Val
                                     315
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Ile Ala Ala Glu Ala Val Thr Cys Leu Val Ile Asp Arg Asp Ser Phe
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               325
Lys His Leu Ile Gly Gly Leu Asp Asp Val Ser Asn Lys Ala Tyr Glu
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Asp Ala Glu Ala Lys Ala Lys Tyr Glu Ala Glu Ala Ala Phe Phe Ala
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Asn Leu Lys Leu Ser Asp Phe Asn Ile Ile Asp Thr Leu Gly Val Gly
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Gly Phe Gly Arg Val Glu Leu Val Gln Leu Lys Ser Glu Glu Ser Lys
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Thr Phe Ala Met Lys Ile Leu Lys Lys Arg His Ile Val Asp Thr Arg
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Gln Gln Glu His Ile Arg Ser Glu Lys Gln Ile Met Gln Gly Ala His
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Ser Asp Phe Ile Val Arg Leu Tyr Arg Thr Phe Lys Asp Ser Lys Tyr
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Leu Tyr Met Leu Met Glu Ala Cys Leu Gly Gly Glu Leu Trp Thr Ile
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Leu Arg Asp Arg Gly Ser Phe Glu Asp Ser Thr Thr Arg Phe Tyr Thr
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                   470
Ala Cys Val Val Glu Ala Phe Ala Tyr Leu His Ser Lys Gly Ile Ile
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Tyr Arg Asp Leu Lys Pro Glu Asn Leu Ile Leu Asp His Arg Gly Tyr
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Ala Lys Leu Val Asp Phe Gly Phe Ala Lys Lys Ile Gly Phe Gly Lys
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                           520
Lys Thr Trp Thr Phe Cys Gly Thr Pro Glu Tyr Val Ala Pro Glu Ile
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Ile Leu Asn Lys Gly His Asp Ile Ser Ala Asp Tyr Trp Ser Leu Gly
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Ile Leu Met Tyr Glu Leu Leu Thr Gly Ser Pro Pro Phe Ser Gly Pro
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                565
Asp Pro Met Lys Thr Tyr Asn Ile Ile Leu Arg Gly Ile Asp Met Ile
                               585
                                                   590
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Glu Phe Pro Lys Lys Ile Ala Lys Asn Ala Ala Asn Leu Ile Lys Lys
                           600
Leu Cys Arg Asp Asn Pro Ser Glu Arg Leu Gly Asn Leu Lys Asn Gly
                                          620
                     615
Val Lys Asp Ile Gln Lys His Lys Trp Phe Glu Gly Phe Asn Trp Glu
                                      635
                   630
Gly Leu Arg Lys Gly Thr Leu Thr Pro Pro Ile Ile Pro Ser Val Ala
                                   650
               645
Ser Pro Thr Asp Thr Ser Asn Phe Asp Ser Phe Pro Glu Asp Asn Asp
                                                  670
                                665
Glu Pro Pro Pro Asp Asp Asn Ser Gly Trp Asp Ile Asp Phe Ser Asp
                            680
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Pro Pro Val Ala Thr Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly
        695
 690
Val Val Pro Ile Leu Val Glu Leu Asp Gly Asp Val Asn Gly His Lys
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                 710
Phe Ser Val Ser Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu
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                                  730
               725
Thr Leu Lys Phe Ile Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro
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Thr Leu Val Thr Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr
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Pro Asp His Met Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu
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                                         780
Gly Tyr Val Gln Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr
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                   790
Lys Thr Arg Ala Glu Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg
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                                 810
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Ile Glu Leu Lys Gly Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly
                                               830
                              825
          820
His Lys Leu Glu Tyr Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala
                         840
Asp Lys Gln Lys Asn Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn
                                  860
                      855
Ile Glu Asp Gly Ser Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr
                                     875
                  870
Pro Ile Gly Asp Gly Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser
                                 890
              885
Thr Gln Ser Ala Leu Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met
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 gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc
                                                                    96
 Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
                                25
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| | | | | | | | | | | | | | aag Lys | | | 144 |
|------------|-------------------|-------------------|-------------------|------------------|------------|-------------------|-------------------|-------------------|------------|------------|-------------------|-------------------|-------------------|------------------|------------|------|
| | | | | | | | | | | | | | gtg Val | | | 192 |
| Leu 65 | Thr | Tyr | Gly | Val | Gln 70 | Cys | Phe | Ser | Arg | Tyr 75 | Pro | Asp | cac His | Met | Lys 80 | 240 |
| cag Gln | cac His | gac Asp | ttc Phe | ttc Phe 85 | aag Lys | tcc Ser | gcc Ala | atg Met | Pro 90 | gaa Glu | Gly | tac Tyr | gtc Val | cag Gln 95 | gag Glu | 288 |
| Arg | Thr | Ile | Phe 100 | Phe | Lys | Asp | Asp | Gly 105 | Asn | Tyr | Lys | Thr | cgc Arg 110 | Ala | Glu | 336 |
| | | | | | | | | | | | | | ctg Leu | | | 384 |
| | | | | | | | | | | | | | ctg Leu | | | 432 |
| Asn 145 | Tyr | Asn | Ser | His | Asn 150 | Val | Tyr | Ile | Met | Ala 155 | Asp | Lys | cag Gln | Lys | Asn 160 | 480 |
| Gly | Ile | Lys | Val | Asn 165 | Phe | Lys | Ile | Arg | His 170 | Asn | Ile | Glu | gac Asp | Gly 175 | Ser | 528 |
| gtg Val | cag Gln | ctc Leu | gcc Ala 180 | gac Asp | cac His | tac Tyr | cag Gln | cag Gln 185 | aac Asn | acc Thr | ccc Pro | atc Ile | ggc Gly 190 | gac Asp | ggc Gly | 576 |
| | | | | | | | | | | | | | tcc Ser | | | 624 |
| agc Ser | aaa Lys 210 | gac Asp | ccc Pro | aac Asn | gag Glu | aag Lys 215 | cgc Arg | gat Asp | cac His | atg Met | gtc Val 220 | ctg Leu | ctg Leu | gag Glu | ttc Phe | 672 |
| Val 225 | Thr | Āla | Āla | Gly | Ile 230 | Thr | Leu | Gly | Met | Asp 235 | Glu | Leu | tac Tyr | Lys | Ser 240 | 720 |
| Gly | Leu | Arg | Ser | Arg 245 | Gly | Thr | Met | Ser | Asp 250 | Val | Ala | Ile | gtg Val | Lys 255 | Glu | 768 |
| Gly | Trp | Leu | His 260 | Lys | Arg | Gly | Glu | Tyr 265 | Ile | Lys | Thr | Trp | cgg Arg 270 | Pro | Arg | 816 |
| Tyr | Phe | Leu 275 | Leu | Lys | Asn | Asp | Gly 280 | Thr | Phe | Ile | Gly | Tyr 285 | aag Lys | Glu | Arg | 864 |
| Pro | Gln 290 | Asp | Val | Asp | Gln | Arg 295 | Glu | Ala | Pro | Leu | Asn 300 | Asn | ttc Phe | Ser | Val | 912 |
| Ala 305 | Gln | Cys | Gln | Leu | Met 310 | Lys | Thr | Glu | Arg | Pro 315 | Arg | Pro | aac Asn | Thr | Phe 320 | 960 |
| Ile | Ile | Arg | Суѕ | Leu 325 | Gln | Trp | Thr | Thr | Val 330 | Ile | Glu | Arg | acc Thr | Phe 335 | His | 1008 |
| | | | | | | | | | | | | | atc Ile 350 | | | 1056 |
| gtg Val | gct Ala | gac Asp 355 | Gly | ctc Leu | aag Lys | aag Lys | cag Gln 360 | Glu | gag Glu | gag Glu | gag Glu | atg Met 365 | gac Asp | ttc Phe | cgg Arg | 1104 |

| tcg Ser | ggc Gly 370 | tca Ser | ccc Pro | agt Ser | gac Asp | aac Asn 375 | tca Ser | ggg Gly | gct Ala | gaa Glu | gag Glu 380 | atg Met | gag Glu | gtg Val | tcc Ser | 1152 |
|------------|-------------------|------------|------------|------------|-------------------|-------------------|------------|------------|------------|------------|-------------------|------------|------------|------------|------------|--------------|
| Leu 385 | Ala | Lys | Pro | Lys | cac His 390 | Arg | Val | Thr | Met | Asn 395 | Glu | Phe | Glu | Tyr | Leu 400 | 1200 |
| Lys | Leu | Leu | Gly | Lys 405 | ggc Gly | Thr | Phe | Gly | Lys 410 | Val | Ile | Leu | Val | Lys 415 | Glu | 1248 |
| Lys | Āla | Thr | Gly 420 | Arg | tac Tyr | Tyr | Ala | Met 425 | Lys | Ile | Leu | Lys | Lys 430 | Glu | Val | 1296 |
| Ile | Val | Ala 435 | Lys | Asp | gag Glu | Val | Ala 440 | His | Thr | Leu | Thr | Glu 445 | Asn | Arg | Val | 1344 |
| Leu | Gln 450 | Asn | Ser | Arg | cac His | Pro 455 | Phe | Leu | Thr | Ala | Leu 460 | Lys | Tyr | Ser | Phe | 1392 |
| Gln 465 | Thr | His | Asp | Arg | ctc Leu 470 | Cys | Phe | Val | Met | Glu 475 | Tyr | Ala | Asn | Gly | Gly 480 | 1440 |
| Glu | Leu | Phe | Phe | His 485 | ctg Leu | Ser | Arg | Glu | Arg 490 | Val | Phe | Ser | Glu | Asp 495 | Arg | 1488 |
| Ala | Arg | Phe | Tyr 500 | Gly | gct Ala | Glu | Ile | Val 505 | Ser | Ala | Leu | Asp | Tyr 510 | Leu | His | 1536 |
| Ser | Glu | Lys 515 | Asn | Val | gtg Val | Tyr | Arg 520 | Asp | Leu | Lys | Leu | Glu 525 | Asn | Leu | Met | 1584 |
| Leu | Asp 530 | Lys | Asp | Gly | cac His | Ile 535 | Lys | Ile | Thr | Asp | Phe 540 | Gly | Leu | Cys | Lys | 1632 |
| Glu 545 | Gly | Ile | Lys | Asp | ggt Gly 550 | Ala | Thr | Met | Lys | Thr 555 | Phe | Cys | Gly | Thr | Pro 560 | 1680 |
| Glu | Tyr | Leu | Ala | Pro 565 | gag Glu | Val | Leu | Glu | Asp 570 | Asn | Asp | Tyr | Gly | Arg 575 | Ala | 1728 |
| Val | Asp | Trp | Trp 580 | Gly | ctg Leu | Gly | Val | Val 585 | Met | Tyr | Glu | Met | Met 590 | Суѕ | Gly | 1776 |
| Arg | Leu | Pro 595 | Phe | Tyr | aac Asn | Gln | Asp 600 | His | Glu | Lys | Leu | Phe 605 | Glu | Leu | Ile | 1824 |
| Leu | Met 610 | Glu | Glu | Ile | cgc Arg | Phe 615 | Pro | Arg | Thr | Leu | Gly 620 | Pro | Glu | Ala | Lys | 1872 1920 |
| Ser 625 | Leu | Leu | Ser | Gly | ctg Leu 630 | Leu | Lys | Lys | Asp | Pro 635 | Lys | Gln | Arg | Leu | Gly 640 | 1968 |
| Gly | Gly | Ser | Glu | Asp 645 | | Lys | Glu | Ile | Met 650 | Gln | His | Arg | Phe | Phe 655 | Ala | 2016 |
| Gly | Ile | Val | Trp 660 | Gln | His | Val | Tyr | Glu 665 | Lys | Lys | Leu | Ser | Pro 670 | Pro | Phe | 2016 |
| Lys | Pro | Gln 675 | Val | Thr | Ser | Glu | Thr 680 | Asp | Thr | Arg | Tyr | Phe 685 | Asp | Glu | gag | |
| ttc Phe | acg Thr 690 | Ala | Gln | atg Met | atc Ile | Thr 695 | Ile | aca Thr | cca Pro | cct Pro | gac Asp 700 | Gln | gat Asp | gac Asp | agc Ser | 2112 |

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       35
                          40
Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
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Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
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                                       75
Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
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                                                  110
Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
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                          120
Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
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Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
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Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
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Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
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Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
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Val Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Ser
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                                      235
Gly Leu Arg Ser Arg Gly Thr Met Ser Asp Val Ala Ile Val Lys Glu
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                                  250 255
Gly Trp Leu His Lys Arg Gly Glu Tyr Ile Lys Thr Trp Arg Pro Arg
                               265
Tyr Phe Leu Leu Lys Asn Asp Gly Thr Phe Ile Gly Tyr Lys Glu Arg
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Pro Gln Asp Val Asp Gln Arg Glu Ala Pro Leu Asn Asn Phe Ser Val
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                                           300
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2160

2184

315

Ala Gln Cys Gln Leu Met Lys Thr Glu Arg Pro Arg Pro Asn Thr Phe

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Ile Ile Arg Cys Leu Gln Trp Thr Thr Val Ile Glu Arg Thr Phe His
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Val Glu Thr Pro Glu Glu Arg Glu Glu Trp Thr Thr Ala Ile Gln Thr
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Val Ala Asp Gly Leu Lys Lys Gln Glu Glu Glu Glu Met Asp Phe Arg
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Ser Gly Ser Pro Ser Asp Asn Ser Gly Ala Glu Glu Met Glu Val Ser
                    375
                                     380
Leu Ala Lys Pro Lys His Arg Val Thr Met Asn Glu Phe Glu Tyr Leu
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Lys Leu Cly Lys Gly Thr Phe Gly Lys Val Ile Leu Val Lys Glu
             405
                               410
Lys Ala Thr Gly Arg Tyr Tyr Ala Met Lys Ile Leu Lys Lys Glu Val
         420
                         425
Ile Val Ala Lys Asp Glu Val Ala His Thr Leu Thr Glu Asn Arg Val
             440
Leu Gln Asn Ser Arg His Pro Phe Leu Thr Ala Leu Lys Tyr Ser Phe
  450 455
                                      460
Gln Thr His Asp Arg Leu Cys Phe Val Met Glu Tyr Ala Asn Gly Gly
             470
                                475
Glu Leu Phe Phe His Leu Ser Arg Glu Arg Val Phe Ser Glu Asp Arg
             485
                               490
Ala Arg Phe Tyr Gly Ala Glu Ile Val Ser Ala Leu Asp Tyr Leu His
         500
                  505 510
Ser Glu Lys Asn Val Val Tyr Arg Asp Leu Lys Leu Glu Asn Leu Met
                      520
Leu Asp Lys Asp Gly His Ile Lys Ile Thr Asp Phe Gly Leu Cys Lys
                                      540
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Glu Gly Ile Lys Asp Gly Ala Thr Met Lys Thr Phe Cys Gly Thr Pro
                 550
                                   555
Glu Tyr Leu Ala Pro Glu Val Leu Glu Asp Asn Asp Tyr Gly Arg Ala
                   570
             565
Val Asp Trp Trp Gly Leu Gly Val Val Met Tyr Glu Met Met Cys Gly
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Arg Leu Pro Phe Tyr Asn Gln Asp His Glu Lys Leu Phe Glu Leu Ile
 595 600
Leu Met Glu Glu Ile Arg Phe Pro Arg Thr Leu Gly Pro Glu Ala Lys
                    615
                         620
Ser Leu Leu Ser Gly Leu Leu Lys Lys Asp Pro Lys Gln Arg Leu Gly
                  630
                                   635
Gly Gly Ser Glu Asp Ala Lys Glu Ile Met Gln His Arg Phe Phe Ala
             645
                               650
Gly Ile Val Trp Gln His Val Tyr Glu Lys Lys Leu Ser Pro Pro Phe
                            665
Lys Pro Gln Val Thr Ser Glu Thr Asp Thr Arg Tyr Phe Asp Glu Glu
                     680
                                         685
Phe Thr Ala Gln Met Ile Thr Ile Thr Pro Pro Asp Gln Asp Asp Ser
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Met Glu Cys Val Asp Ser Glu Arg Arg Pro His Phe Pro Gln Phe Ser
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Tyr Ser Ala Ser Ser Thr Ala
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<211> 2394

<212> DNA

<213> Artificial Sequence

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                                    10
tct ggc ccc tat gtg gag atc att gag cag ccc aag cag cgg ggc atg
                                                                       96
Ser Gly Pro Tyr Val Glu Ile Ile Glu Gln Pro Lys Gln Arg Gly Met
            20
                                25
cgc ttc cgc tac aag tgc gag ggg cgc tcc gcg ggc agc atc cca ggc
                                                                      144
Arg Phe Arg Tyr Lys Cys Glu Gly Arg Ser Ala Gly Ser Ile Pro Gly
                            40
gag agg agc aca gat acc acc aag acc cac ccc acc atc aag atc aat
                                                                      192
Glu Arg Ser Thr Asp Thr Thr Lys Thr His Pro Thr Ile Lys Ile Asn
                        55
ggc tac aca gga cca ggg aca gtg cgc atc tcc ctg gtc acc aag gac
                                                                      240
Gly Tyr Thr Gly Pro Gly Thr Val Arg Ile Ser Leu Val Thr Lys Asp
                    70
                                        75
cct cct cac cgg cct cac ccc cac gag ctt gta gga aag gac tgc cgg
                                                                      288
Pro Pro His Arg Pro His Pro His Glu Leu Val Gly Lys Asp Cys Arg
                8.5
                                    90
gat ggc ttc tat gag gct gag ctc tgc ccg gac cgc tgc atc cac agt
                                                                      336
Asp Gly Phe Tyr Glu Ala Glu Leu Cys Pro Asp Arg Cys Ile His Ser
            100
                                105
ttc cag aac ctg gga atc cag tgt gtg aag aag cgg gac ctg gag cag
                                                                      384
Phe Gln Asn Leu Gly Ile Gln Cys Val Lys Lys Arg Asp Leu Glu Gln
                            120
                                                 125
gct atc agt cag cgc atc cag acc aac aac acc ccc ttc caa gtt cct
                                                                      432
Ala Ile Ser Gln Arg Ile Gln Thr Asn Asn Asn Pro Phe Gln Val Pro
                        135
                                             140
ata gaa gag cag cgt ggg gac tac gac ctg aat gct gtg cgg ctc tgc
                                                                      480
Ile Glu Glu Gln Arg Gly Asp Tyr Asp Leu Asn Ala Val Arg Leu Cys
                    150
                                        155
tto cag gtg aca gtg cgg gac cca tca ggc agg ccc ctc cgc ctg ccg
                                                                      528
Phe Gln Val Thr Val Arg Asp Pro Ser Gly Arg Pro Leu Arg Leu Pro
                165
                                    170
                                                         175
cct gtc ctt cct cat ccc atc ttt gac aat cgt gcc ccc aac act gcc
                                                                      576
Pro Val Leu Pro His Pro Ile Phe Asp Asn Arg Ala Pro Asn Thr Ala
           180
                                185
                                                     190
gag etc aag atc tge ega gtg aac ega aac tet gge age tge etc ggt
                                                                       624
Glu Leu Lys Ile Cys Arg Val Asn Arg Asn Ser Gly Ser Cys Leu Gly
                            200
                                                 205
ggg gat gag atc ttc cta ctg tgt gac aag gtg cag aaa gag gac att
                                                                       672
Gly Asp Glu Ile Phe Leu Leu Cys Asp Lys Val Gln Lys Glu Asp Ile
                        215
gag gtg tat ttc acg gga cca ggc tgg gag gcc cga ggc tcc ttt tcg
                                                                       720
Glu Val Tyr Phe Thr Gly Pro Gly Trp Glu Ala Arg Gly Ser Phe Ser
                    230
                                        235
caa gct gat gtg cac cga caa gtg gcc att gtg ttc cgg acc cct ccc
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Gln Ala Asp Val His Arg Gln Val Ala Ile Val Phe Arg Thr Pro Pro
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250

245

| tac Tyr | gca Ala | gac Asp | ccc Pro 260 | agc Ser | ctg Leu | cag Gln | gct Ala | cct Pro 265 | gtg Val | cgt Arg | gtc Val | tcc Ser | atg Met 270 | cag Gln | ctg Leu | 816 |
|------------|------------|-------------------|-------------------|------------|------------|------------|-------------------|-------------------|------------|------------|------------|-------------------|-------------------|------------|------------|------|
| cgg Arg | cgg Arg | cct Pro 275 | tcc Ser | gac Asp | cgg Arg | gag Glu | ctc Leu 280 | agt Ser | gag Glu | ccc Pro | atg Met | gaa Glu 285 | ttc Phe | cag Gln | tac Tyr | 864 |
| | | | aca Thr | | | | | | | | | | | | | 912 |
| | | | acc Thr | | _ | _ | | _ | - | _ | _ | | | | | 960 |
| | | _ | ccc Pro | | | | | _ | - | | - | | | | _ | 1008 |
| Ser | Ser | Ála | tct Ser 340 | Val | Pro | Lys | Pro | Ala 345 | Pro | Gln | Pro | Tyr | Pro 350 | Phe | Thr | 1056 |
| Ser | Ser | Leu 355 | agc Ser | Thr | Ile | Asn | Tyr 360 | Asp | Glu | Phe | Pro | Thr 365 | Met | Val | Phe | 1104 |
| Pro | Ser 370 | Gly | cag Gln | Ile | Ser | Gln 375 | Ala | Ser | Ala | Leu | Ala 380 | Pro | Ala | Pro | Pro | 1152 |
| Gln 385 | Val | Leu | ccc Pro | Gln | Ala 390 | Pro | Ala | Pro | Ala | Pro 395 | Ala | Pro | Ala | Met | Val 400 | 1200 |
| Ser | Āla | Leu | gcc Ala | Gln 405 | Ala | Pro | Ala | Pro | Val 410 | Pro | Val | Leu | Ala | Pro 415 | Gly | 1248 |
| Pro | Pro | Gln | gct Ala 420 | Val | Ala | Pro | Pro | Ala 425 | Pro | Lys | Pro | Thr | Gln 430 | Ala | Gly | 1296 |
| Glu | Gly | Thr 435 | ctg Leu | Ser | Glu | Ala | Leu 440 | Leu | Gln | Leu | Gln | Phe 445 | Asp | Asp | Glu | 1344 |
| Asp | Leu 450 | Gly | gcc Ala | Leu | Leu | Gly 455 | Asn | Ser | Thr | Asp | Pro 460 | Ala | Val | Phe | Thr | 1392 |
| Asp 465 | Leu | Āla | tcc Ser | Val | Asp 470 | Asn | Ser | Glu | Phe | Gln 475 | Gln | Leu | Leu | Asn | Gln 480 | 1440 |
| Gly | Ile | Pro | | Ala 485 | Pro | His | Thr | Thr | Glu 490 | Pro | Met | Leu | Met | Glu 495 | Tyr | 1488 |
| Pro | Glu | Āla | ata Ile 500 | Thr | Arg | Leu | Val | Thr 505 | Gly | Ala | Gln | Arg | Pro 510 | Pro | Asp | 1536 |
| Pro | Ala | Pro 515 | gct Ala | Pro | Leu | Gly | Ala 520 | Pro | Gly | Leu | Pro | Asn 525 | Gly | Leu | Leu | 1584 |
| Ser | Gly 530 | Asp | gaa Glu | Asp | Phe | Ser 535 | Ser | Ile | Ala | Asp | Met 540 | Asp | Phe | Ser | Ala | 1632 |
| Leu 545 | Leu | Ser | cag Gln | Ile | Ser 550 | Ser | Leu | Asp | Pro | Pro 555 | Val | Ala | Thr | Met | Val 560 | 1680 |
| Ser | Lys | Gly | gag Glu | Glu 565 | Leu | Phe | Thr | Gly | Val 570 | Val | Pro | Ile | Leu | Val 575 | Glu | 1728 |
| ctg Leu | gac Asp | ggc Gly | gac Asp 580 | gta Val | aac Asn | ggc | cac His | aag Lys 585 | Phe | agc Ser | gtg Val | tcc Ser | ggc Gly 590 | Glu | Gly | 1776 |

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gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc tgc acc
                                                                     1824
Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr
                            600
                                                605
                                                                     1872
acc ggc aag ctg ccc gtg ccc tgg ccc acc ctc gtg acc acc ctg acc
Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu Thr
                        615
    610
tac ggc gtg cag tgc ttc agc cgc tac ccc gac cac atg aag cag cac
                                                                     1920
Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln His
                    630
                                        635
gac ttc ttc aag tcc gcc atg ccc gaa ggc tac gtc cag gag cgc acc
                                                                     1968
Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg Thr
                                    650
                                                                     2016
atc ttc ttc aag gac gac ggc aac tac aag acc cgc gcc gag gtg aag
Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val Lys
                                665
                                                                     2064
ttc gag ggc gac acc ctg gtg aac cgc atc gag ctg aag ggc atc gac
Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile Asp
                            680
                                                685
       675
                                                                     2112
ttc aag gag gac ggc aac atc ctg ggg cac aag ctg gag tac aac tac
Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn Tyr
                       695
   690
aac agc cac aac gtc tat atc atg gcc gac aag cag aag aac ggc atc
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Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly Ile
                                         715
                    710
aag gtg aac ttc aag atc cgc cac aac atc gag gac ggc agc gtg cag
                                                                     2208
Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val Gln
                                     730
                725
                                                                     2256
ctc gcc gac cac tac cag cag aac acc ccc atc ggc gac ggc ccc gtg
Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro Val
                                745
ctg ctg ccc gac aac cac tac ctg agc acc cag tcc gcc ctg agc aaa
                                                                     2304
Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser Lys
                                                 765
                            760
gac ccc aac gag aag cgc gat cac atg gtc ctg ctg gag ttc gtg acc
                                                                      2352
Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val Thr
                        775
                                             780
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<213> Artificial Sequence

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Asp Gly Phe Tyr Glu Ala Glu Leu Cys Pro Asp Arg Cys Ile His Ser
                            105
          100
Phe Gln Asn Leu Gly Ile Gln Cys Val Lys Lys Arg Asp Leu Glu Gln
                                            125
                120
  115
Ala Ile Ser Gln Arg Ile Gln Thr Asn Asn Asn Pro Phe Gln Val Pro
                                         140
           135
Ile Glu Glu Gln Arg Gly Asp Tyr Asp Leu Asn Ala Val Arg Leu Cys
                                    155
                  150
Phe Gln Val Thr Val Arg Asp Pro Ser Gly Arg Pro Leu Arg Leu Pro
                                 170
               165
Pro Val Leu Pro His Pro Ile Phe Asp Asn Arg Ala Pro Asn Thr Ala
                                                190
                             185
           180
Glu Leu Lys Ile Cys Arg Val Asn Arg Asn Ser Gly Ser Cys Leu Gly
                         200
       195
Gly Asp Glu Ile Phe Leu Leu Cys Asp Lys Val Gln Lys Glu Asp Ile
                                        220
             215
Glu Val Tyr Phe Thr Gly Pro Gly Trp Glu Ala Arg Gly Ser Phe Ser
                                    235
                  230
Gln Ala Asp Val His Arg Gln Val Ala Ile Val Phe Arg Thr Pro Pro
                                250
               245
Tyr Ala Asp Pro Ser Leu Gln Ala Pro Val Arg Val Ser Met Gln Leu
          260 265
Arg Arg Pro Ser Asp Arg Glu Leu Ser Glu Pro Met Glu Phe Gln Tyr
                                             285
                280
Leu Pro Asp Thr Asp Asp Arg His Arg Ile Glu Glu Lys Arg Lys Arg
                                         300
          295
Thr Tyr Glu Thr Phe Lys Ser Ile Met Lys Lys Ser Pro Phe Ser Gly
                   310
                                     315
 Pro Thr Asp Pro Arg Pro Pro Pro Arg Arg Ile Ala Val Pro Ser Arg
                                 330
               325
Ser Ser Ala Ser Val Pro Lys Pro Ala Pro Gln Pro Tyr Pro Phe Thr
                              345
 Ser Ser Leu Ser Thr Ile Asn Tyr Asp Glu Phe Pro Thr Met Val Phe
                          360
                                             365
 Pro Ser Gly Gln Ile Ser Gln Ala Ser Ala Leu Ala Pro Ala Pro Pro
                                       380
                       375
 Gln Val Leu Pro Gln Ala Pro Ala Pro Ala Pro Ala Pro Ala Met Val
                                     395
                  390
 Ser Ala Leu Ala Gln Ala Pro Ala Pro Val Pro Val Leu Ala Pro Gly
                                  410
               405
 Pro Pro Gln Ala Val Ala Pro Pro Ala Pro Lys Pro Thr Gln Ala Gly
                              425
           420
 Glu Gly Thr Leu Ser Glu Ala Leu Leu Gln Leu Gln Phe Asp Asp Glu
                           440
                                             445
       435
 Asp Leu Gly Ala Leu Leu Gly Asn Ser Thr Asp Pro Ala Val Phe Thr
                      455
 Asp Leu Ala Ser Val Asp Asn Ser Glu Phe Gln Gln Leu Leu Asn Gln
                                      475
                   470
 Gly Ile Pro Val Ala Pro His Thr Thr Glu Pro Met Leu Met Glu Tyr
                                                     495
                                  490
 Pro Glu Ala Ile Thr Arg Leu Val Thr Gly Ala Gln Arg Pro Pro Asp
                               505
            500
 Pro Ala Pro Ala Pro Leu Gly Ala Pro Gly Leu Pro Asn Gly Leu Leu
                           520
 Ser Gly Asp Glu Asp Phe Ser Ser Ile Ala Asp Met Asp Phe Ser Ala
                                          540
                     535
 Leu Leu Ser Gln Ile Ser Ser Leu Asp Pro Pro Val Ala Thr Met Val
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Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu
                                  570
               565
Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly
                                                 590
                             585
           580
Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr
                                            605
                          600
Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu Thr
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                      615
Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln His
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                 630
Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg Thr
                                   650
               645
Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val Lys
                                                  670
                               665
        660
Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile Asp
                                             685
                           680
Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn Tyr
                                           700
                       695
Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly Ile
                                       715
                   710
Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val Gln
                                                      735
                                   730
               725
Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro Val
                                                  750
                            745
            740
Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser Lys
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 Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val Thr
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 Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys
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                                     10
  gtc gag ctg gac ggc gac gta aac ggc cac aag ttc agc gtg tcc ggc
                                                                      96
  Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
                                25
             20
  gag ggc gag ggc gat gcc acc tac ggc aag ctg acc ctg aag ttc atc
                                                                     144
  Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
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| | | 35 | | | | | 40 | | | | | 45 | | | | |
|------|------------|-------------|------------|------------|------------|--------------|--------------|---------------|------------|------------|---------------|--------|--------------|-----------|----------------|-------------|
| tac | acc | acc | aac | aaq | ctg | ccc | ata | ccc 1 | tgg | ccc | acc | ctc | gtg | acc | acc | 192 |
| Cys | Thr 50 | Thr | Gly | Lys | Leu | Pro 55 | Val | Pro ' | Гrр | Pro | Thr 60 | Leu | Val | Thr | Thr | |
| cta | acc | tac | aac | ata | cag | tac | ttc | agc | cgc | tac | ccc | gac | cac | atg | aag | 240 |
| Leu | Thr | Tyr | Gly | Val | Gln 70 | Cys | Phe | Ser . | Arg | Tyr 75 | Pro | Asp | His | Met | Lys 80 | |
| 65 | C 2 C | a a c | ttc | ttc | aag | t.cc | acc | atσ | ccc | gaa | ggc | tac | gtc | cag | gag | 288 |
| Gln | His | Asp | Phe | Phe 85 | Lys | Ser | Ala | Met | Pro 90 | Ğlu | Ğİy | Tyr | Val | Gln 95 | Glu | |
| cac | 200 | atc | ttc | | aag | gac | gac | aac | aac | tac | aag | acc | cgc | gcc | gag | 336 |
| Arg | Thr | Ile | Phe | Phe | Lys | Åsp | Ásp | Gly 105 | Asn | Tyr | Lys | Thr | Arg 110 | Ala | Glu | |
| at a | nee | ttc | gag | aac | gac | acc | cta | ata | aac | cgc | atc | gag | ctg | aag | ggc | 384 |
| Val | Lys | Phe | Glu | Gly | Asp | Thr | Leu 120 | Val | Asn | Arg | IIe | 125 | ьeu | гуѕ | GIY | |
| atc | gac | ttc | aaσ | σασ | gac | aac | aac | atc | ctg | ggg | cac | aag | ctg | gag | tac | 432 |
| Ile | Asp 130 | Phe | Lys | Glu | Asp | Gly 135 | Asn | Ile | Leu | Gly | His 140 | Lys | Leu | GIU | туг | |
| aac | tac | aac | aσc | cac | aac | gtc | tat | atc | atg | gcc | gac | aag | cag | aag | aac | 480 |
| Asn | Tyr | Asn | Ser | His | Asn 150 | Val | Tyr | Ile | Met | Ala 155 | Asp | Lys | GIn | Lys | 160 | |
| aac | atc | aaσ | ata | aac | ttc | aag | atc | cgc | cac | aac | atc | gag | gac | ggc | agc | 528 |
| Gly | Ile | Lys | Val | Asn 165 | Phe | Lys | Ile | Arg | His 170 | Asn | lle | GLu | Asp | 175 | ser | |
| ata | cag | ctc | acc | gac | cac | tac | cag | cag | aac | acc | ccc | atc | ggc | gac | ggc | 576 |
| Val | Gln | Leu | Ala 180 | Asp | His | Tyr | Gln | Gln 185 | Asn | Thr | Pro | TTE | 190 | Asp | GIÀ | |
| CCC | ata | cta | cto | r ccc | gac | aac | cac | tac | ctg | agc | acc | cag | tcc | gcc | ctg | 624 |
| Pro | Val | Leu 195 | Let | ı Pro | Asp | Asn | His 200 | Tyr | Leu | Ser | Thr | 205 | Ser | Ата | ьeu | |
| agc | aaa | gac | CCC | aac | gag | aag | cgc | gat | cac | atg | gtc | ctg | ctg | gag | ttc | 672 |
| Ser | Lys | Asp | Pro |) Asr | ı Glu | Lys 215 | Arg | Asp | His | Met | 220 | Leu | Leu | GIU | Pne | |
| ata | acc | acc | gc | ggg | g atc | act | ctc | ggc | atg | gac | gag | ctg | tac | aag | tcc | 720 |
| Val | Thr | Ála | ı Ála | a Gly | , Ile | Thr | Leu | Gly | Met | Asp | Glu | Leu | Tyr | Lys | ser | |
| 225 | | | | | 230 | | | | | 235 | | | | | 240 | 5.60 |
| 772 | cto | aga | a tc | t cga | a gcc | atg | gac | gaa | ctg | ttc | CCC | ctc | atc | ttc | ccg | 768 |
| Ğĺy | Leu | Arg | g Se | r Arg | g Ala | Met | Asp | Glu | Leu | Phe | Pro | Leu | Ile | PHE | PIO | |
| | | | | 245 | 5 | | | | 250 | | | | | 255 |) | 016 |
| gca | gag | cca | a gc | c cag | g gcc | tct | ggc | ccc | tat | gtg | gag | , atc | att | gag | cag | 816 |
| Ala | a Glu | ı Pro | 26 | a Glr O | n Ala | Ser | Gly | Pro 265 | Tyr | Val | GLU | ııre | 270 |) | I GIII | 864 |
| ccc | aaq | g ca | g cg | g gg | c atg | cac | ttc | cgc | tac | aag | tgo | gag | ggg | g ege | tcc | 004 |
| Pro | Lys | 3 Gli 27 | n Ar 5 | g Gl | y Met | Arg | Phe 280 | Arg | Tyr | ГАЗ | cys | 285 | r er? | ALC | j ser | 912 |
| gcg | g ggd | ag | c at | c cc | a ggo | gaç | agg | , agc | aca | gat | aco | acc | aaq | acc | cac | 712 |
| | 290 |) | | | | 295 | , | | | | 300 |) | | | r His | 960 |
| CC | c acc | c at | c aa | g at | c aat | ggd | : tac | aca | . gga | . cca | ggg | y acc | . yu | y Cy | c atc | 500 |
| Pro | o Thi | r Il | е Lу | s Il | | | у Туі | : Thr | . GTZ | 7 Pro |) GT | A 1111 | . va. | I AL | g Ile 320 | |
| 30 | 5 | | | | 310 |) | | | | 315 | | | | ~ ~~ | | 1008 |
| tc | c ct | g gt | c ac | c aa | g gad | c cct | cct | cac | cgg | j cct | ca ca | C CCC | : Ca | - cl | g ctt | 1000 |
| | | | | 32 | 5 | | | | 330 |) | | | | 33 | | 1056 |
| gt | a gg | a aa | g ga | ıc tg | c cg | g gai | c gg | c tto | tat | gaq | g gc | t gag | y Ct | c tg | c ccg | 1036 |
| Va | ı Gi | у Гу | s As | эр Су | s Ar | g As | o Gl | y Phe | YY: | r GI | u Al | a GII | ье 35 | u Cy | s Pro | |
| | | | 34 | 10 | | | | 345 | | | + | a aa | | | n 220 | 1104 |
| ga | c cg | c tg | c at | c ca | c ag | t tt | c ca | g aad | CTO | y gga | а ас ., ті | C Cd | y LY n Cv | c yr | g aag 1 Lvs | |
| As | p Ar | | | Le Hi | .s Se | r Ph | e GI: | n Ası ^ | теі | u GI | А ТТ | e GI: | цСу 5 | ى va | l Lys | |
| | | 35 | 5 | | _ | | 36 | | - ~- | ~ ~~ | C s+ | | | c aa | c aac | 1152 |
| aa | g cg | g ga | ic ct | ig ga | ig ca | g gc n Al | ı at a Il | e Sei | r Gl | n Ar | g Il | e Gl | n Th | r As | c aac n Asn | - |
| ьу | s Ar | g As | , μ. | su Gl | Lu GI | " VT | | J J U. | | | J | | | | | |

| | 370 | | | | | 375 | | | | | 380 | | | | | |
|------|------------|--------|----------------|------------|------------|------------|-------------|------------|-----|-------|------|------------|-----|------------|-----|-------|
| aac | ccc | ttc | caa | gtt | cct | | gaa | gag | cag | cgt | ggg | gac | tac | gac | ctg | 1200 |
| Asn | Pro | Phe | Gln | Val | Pro | Ile | Glu | Glu | Gln | Arg | Gly | Asp | Tyr | Asp | Leu | |
| 385 | | | | | 390 | | | | | 395 | | | | | 400 | 1040 |
| aat | gct | gtg | cgg | ctc | tgc | ttc | cag | gtg | aca | gtg | cgg | gac | CCa | cor | ggc | 1248 |
| Asn | Ala | val | Arg | ьеи 405 | Cys | Pne | GIII | vai | 410 | Val | Arg | АЅР | FIO | 415 | GIA | |
| agg | ccc | ctc | cac | | cca | cct | atc | ctt | | cat | ccc | atc | ttt | | aat | 1296 |
| Ara | Pro | Leu | Ara | Leu | Pro | Pro | Val | Leu | Pro | His | Pro | Ile | Phe | Āsp | Asn | |
| - | | | 420 | | | | | 425 | | | | | 430 | | | |
| cgt | gcc | ccc | aac | act | gcc | gag | ctc | aag | atc | tgc | cga | gtg | aac | cga | aac | 1344 |
| Arg | Ála | Pro | Asn | Thr | Ala | Glu | | Lys | Ile | Cys | Arg | | Asn | Arg | Asn | |
| | | 435 | | | | | 440 | | | | | 445 | +~+ | ~~~ | 224 | 1392 |
| tct | ggc Gly | agc | tgc | ctc | ggt | ggg | gat | Glu | Tlo | Dhe | T.em | Leu | Cvs | Asn | Lvs | 1392 |
| ser | 450 | ser | Cys | ьeu | GTÀ | 455 | Азр | GIU | 116 | FIIC | 460 | пец | Cys | пор | дув | |
| ata | cag | aaa | σασ | gac | att | | ata | tat | ttc | acq | | cca | ggc | tgg | gag | 1440 |
| Val | Gln | Lys | Glu | Asp | Ile | Glu | Val | Tyr | Phe | Thr | Ğĺy | Pro | Gly | Trp | Glu | |
| 465 | | | | | 470 | | | | | 475 | | | | | 480 | |
| gcc | cga | ggc | tcc | ttt | tcg | caa | gct | gat | gtg | cac | cga | caa | gtg | gcc | att | 1488 |
| Ala | Arg | Gly | Ser | | Ser | Gln | Ala | Asp | | His | Arg | Gln | Val | | Пе | |
| | | | | 485 | | + | ~~~ | ~~~ | 490 | 200 | ata | C 2 C | act | 495 | ata | 1536 |
| gtg | ttc Phe | cgg | Thr | Dro | Dro | Tur | y Ca Ala | yac Asn | Pro | Ser | Len | Gln | Ala | Pro | Val | 1330 |
| vaı | rne | Arg | 500 | FIO | LIO | ıyı | пта | 505 | 110 | 501 | | 0111 | 510 | | | |
| cat | gtc | tcc | | caq | ctq | cqq | cgg | | tcc | gac | cgg | gag | ctc | agt | gag | 1584 |
| Arg | Val | Ser | Met | Gln | Leu | Arg | Arg | Pro | Ser | Asp | Arg | Glu | Leu | Ser | Glu | |
| | | 515 | | | | | 520 | | | | | 525 | | | | 1.620 |
| ccc | atg | gaa | ttc | cag | tac | ctg | cca | gat | aca | gac | gat | cgt | cac | cgg | att | 1632 |
| Pro | Met | Glu | Phe | Gln | Tyr | | Pro | Asp | Thr | Asp | 540 | Arg | HIS | Arg | тте | |
| ~~~ | 530 gag | 222 | cat | 222 | 200 | 535 | tat | gag | acc | ttc | | age | atc | atα | aaα | 1680 |
| Glii | Glu | Lvs | Ara | Lvs | Ara | Thr | Tvr | Glu | Thr | Phe | Lys | Ser | Ile | Met | Lys | |
| 545 | 014 | | 9 | -1- | 550 | | - 4 - | | | 555 | - | | | | 560 | |
| aag | agt | cct | ttc | agc | gga | ccc | acc | gac | ccc | cgg | cct | cca | cct | cga | cgc | 1728 |
| Lys | Ser | Pro | Phe | | Gly | Pro | Thr | Asp | | Arg | Pro | Pro | Pro | | Arg | |
| | | | | 565 | | | | | 570 | | | ~ | | 575 | 222 | 1776 |
| att | gct Ala | gtg | CCT | tcc | cgc | agc | cca | gct | Ser | Val | Pro | Lvs | Pro | Ala | Pro | 1770 |
| ire | Ald | val | 580 | ser | Arg | Set | 261 | 585 | Ser | Val | 110 | Буб | 590 | 1114 | | |
| cag | ccc | tat | | ttt | acq | tca | tcc | | agc | acc | atc | aac | tat | gat | gag | 1824 |
| Gln | Pro | Tyr | Pro | Phe | Thr | Ser | Ser | Leu | Ser | Thr | Ile | Asn | Tyr | Asp | Glu | |
| | | 595 | | | | | 600 | | | | | 605 | | | | |
| ttt | ccc | acc | atg | gtg | ttt | cct | tct | ggg | cag | atc | agc | cag | gcc | tcg | gcc | 1872 |
| Phe | Pro | | Met | Val | Phe | | Ser | GLY | GIn | тте | | GIn | Ата | ser | Ala | |
| ++~ | 610 gcc | | ~~~ | cat | 666 | 615 | atc | cta | ccc | cad | 620 | cca | acc | cct | acc | 1920 |
| LLG | Ala | Pro | Ala | Pro | Pro | Gln | Val | Leu | Pro | Gln | Ala | Pro | Ala | Pro | Ala | |
| 625 | | | | | 630 | | | | | 635 | | | | | 640 | |
| cct | gct | cca | gcc | atg | gta | tca | gct | ctg | gcc | cag | gcc | cca | gcc | cct | gtc | 1968 |
| Pro | Ála | Pro | Ala | Met | Val | Ser | Ala | Leu | Ala | Gln | Ala | Pro | Ala | Pro | Val | |
| | | | | 645 | | | | | 650 | | | | | 655 | | 2016 |
| cca | gtc Val | cta | gcc | cca | ggc | cct | CCt | cag | gct | gtg | gcc | CCa Pro | Dro | gcc ala | Pro | 2016 |
| Pro | val | ьeu | 660 | | GIY | PLO | PIO | 665 | | val | лта | 110 | 670 | 1114 | 110 | |
| aad | r ccc | acc | | | aaa | σaa | gga | | | tca | gag | gcc | | ctg | cag | 2064 |
| Lvs | Pro | Thr | Gln | Ala | Gly | Glu | Gly | Thr | Leu | Ser | Ğlu | Āla | Leu | Leu | Gln | |
| _ | | 675 | ı | | | | 680 | | | | | 685 | | | | = |
| ctg | g cag | ttt | gat | gat | gaa | gac | ctg | ggg | gcc | ttg | ctt | ggc | aac | agc | aca | 2112 |
| Lev | | | Asp | Asp | Glu | | | Gly | Ala | Leu | | | Asn | Ser | Thr | |
| | 690 | | · ~+~ | ++- | | 695 | | | +00 | ato | 700 | | too | gan | ttt | 2160 |
| gac | . CCa | . gct | . ylg . Val | Pho | aca Thr | yac Asn | Len | yca Ala | Ser | . yal | Asn | Asn | Ser | Glu | Phe | |
| LO L | | - 1710 | . чат | | | | | | | | ~ _ | | | | - | |

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720
                                        715
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cag cag ctg ctg aac cag ggc ata cct gtg gcc ccc cac aca act gag
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Gln Gln Leu Leu Asn Gln Gly Ile Pro Val Ala Pro His Thr Thr Glu
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               725
                                                                    2256
ccc atg ctg atg gag tac cct gag gct ata act cgc cta gtg aca ggg
Pro Met Leu Met Glu Tyr Pro Glu Ala Ile Thr Arg Leu Val Thr Gly
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           740
gcc cag agg ccc ccc gac cca gct cct gct cca ctg ggg gcc ccg ggg
                                                                    2304
Ala Gln Arg Pro Pro Asp Pro Ala Pro Ala Pro Leu Gly Ala Pro Gly
                                               765
                            760
        755
                                                                    2352
ctc ccc aat ggc ctc ctt tca gga gat gaa gac ttc tcc tcc att gcg
Leu Pro Asn Gly Leu Leu Ser Gly Asp Glu Asp Phe Ser Ser Ile Ala
                                           780
                        775
                                                                    2394
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<220>

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Gly Leu Arg Ser Arg Ala Met Asp Glu Leu Phe Pro Leu Ile Phe Pro
              245
                                   250
Ala Glu Pro Ala Gln Ala Ser Gly Pro Tyr Val Glu Ile Ile Glu Gln
                               265
Pro Lys Gln Arg Gly Met Arg Phe Arg Tyr Lys Cys Glu Gly Arg Ser
                           280
Ala Gly Ser Ile Pro Gly Glu Arg Ser Thr Asp Thr Thr Lys Thr His
                       295
                                          300
Pro Thr Ile Lys Ile Asn Gly Tyr Thr Gly Pro Gly Thr Val Arg Ile
                                      315
                   310
Ser Leu Val Thr Lys Asp Pro Pro His Arg Pro His Pro His Glu Leu
                                   330
              325
Val Gly Lys Asp Cys Arg Asp Gly Phe Tyr Glu Ala Glu Leu Cys Pro
                               345
Asp Arg Cys Ile His Ser Phe Gln Asn Leu Gly Ile Gln Cys Val Lys
                        360
Lys Arg Asp Leu Glu Gln Ala Ile Ser Gln Arg Ile Gln Thr Asn Asn
                                          380
                     375
Asn Pro Phe Gln Val Pro Ile Glu Glu Gln Arg Gly Asp Tyr Asp Leu
                                      395
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Asn Ala Val Arg Leu Cys Phe Gln Val Thr Val Arg Asp Pro Ser Gly
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                                   410
Arg Pro Leu Arg Leu Pro Pro Val Leu Pro His Pro Ile Phe Asp Asn
                               425
Arg Ala Pro Asn Thr Ala Glu Leu Lys Ile Cys Arg Val Asn Arg Asn
                           440
                                               445
Ser Gly Ser Cys Leu Gly Gly Asp Glu Ile Phe Leu Leu Cys Asp Lys
                      455
                                           460
Val Gln Lys Glu Asp Ile Glu Val Tyr Phe Thr Gly Pro Gly Trp Glu
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Ala Arg Gly Ser Phe Ser Gln Ala Asp Val His Arg Gln Val Ala Ile
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Val Phe Arg Thr Pro Pro Tyr Ala Asp Pro Ser Leu Gln Ala Pro Val
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Arg Val Ser Met Gln Leu Arg Arg Pro Ser Asp Arg Glu Leu Ser Glu
                                              525
                           520
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Pro Met Glu Phe Gln Tyr Leu Pro Asp Thr Asp Asp Arg His Arg Ile
                                          540
                       535
Glu Glu Lys Arg Lys Arg Thr Tyr Glu Thr Phe Lys Ser Ile Met Lys
                                        555
                550
Lys Ser Pro Phe Ser Gly Pro Thr Asp Pro Arg Pro Pro Pro Arg Arg
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                565
Ile Ala Val Pro Ser Arg Ser Ser Ala Ser Val Pro Lys Pro Ala Pro
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 Gln Pro Tyr Pro Phe Thr Ser Ser Leu Ser Thr Ile Asn Tyr Asp Glu
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                            600
 Phe Pro Thr Met Val Phe Pro Ser Gly Gln Ile Ser Gln Ala Ser Ala
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                       615
 Leu Ala Pro Ala Pro Pro Gln Val Leu Pro Gln Ala Pro Ala Pro Ala
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 Pro Ala Pro Ala Met Val Ser Ala Leu Ala Gln Ala Pro Ala Pro Val
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 Pro Val Leu Ala Pro Gly Pro Pro Gln Ala Val Ala Pro Pro Ala Pro
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           660
 Lys Pro Thr Gln Ala Gly Glu Gly Thr Leu Ser Glu Ala Leu Leu Gln
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                            680
 Leu Gln Phe Asp Asp Glu Asp Leu Gly Ala Leu Leu Gly Asn Ser Thr
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 Asp Pro Ala Val Phe Thr Asp Leu Ala Ser Val Asp Asn Ser Glu Phe
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                    710
 Gln Gln Leu Leu Asn Gln Gly Ile Pro Val Ala Pro His Thr Thr Glu
                                    730
                 725
 Pro Met Leu Met Glu Tyr Pro Glu Ala Ile Thr Arg Leu Val Thr Gly
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Ala Gln Arg Pro Pro Asp Pro Ala Pro Ala Pro Gly 765

Leu Pro Asn Gly Leu Leu Ser Gly Asp Glu Asp Glu Asp Glu Asp Glu Asp Arg Ser Ile Ala Asp Met Asp Pro As Ala Leu Leu Leu Leu Ser Gln Ile Ser Gln Ile Ser Ser Ile Ala 7785

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